MINING AND PETROLEUM STANDARD

AND

AMERICAN GAS-LIGHT JOURNAL.

Devoted to Mining, Petroleum, Gas, Water Supply, and Scientific Subjects Generally.

PUBLISHING OFFICE NO. 22 PINE STREET.

VOLUME IX—No. 2.
WHOLE No. 182.

NEW YORK, TUESDAY, JULY 16, 1867.

$3 PER ANNUM
IN ADVANCE.

Miner's Patent Street Lamps.

Modern improvements have made great changes in the form, style and convenience of the various devices in gas fixtures and apparatus for burning gas for lighting purposes. Manufacturers vie with each other in the effort to produce novel and beautiful devices in gas lamps and chandeliers and the like, and special adaptations are made for dwellings, hotels, public halls, etc., in order to give the best effect to, and economize the light.

Street lamps have not seemed to receive the same attention. The same stereotyped form has been used for half a century, with little alteration or improvement.

Miner's Patent Street Lamp, illustrated herewith,

MINER'S PATENT STREET LAMP.

has taken a decided step in advance in improvement for its beauty and elegance, and its economy of light, the ease with which it is cleaned, and its cheapness and durability, and great superiority every way when compared with the old style of lamp mostly in use.

The engraving will give the intelligent reader a clear idea of its construction at a glance. It has a metallic dome of ornamental form, with a semi-spherical glass attached to it below. Four small iron rods support the dome and lamp, and secure it to the lamp post, and the gas burner enters a small orifice at the bottom of the glass. Of course the globular form of the glass is best adapted to resist the effect of a blow and to prevent casting a shadow, while the dome projects somewhat beyond the glass, the under side presenting an annular convex surface painted or enamelled white. This serves to prevent the rain from reaching and staining the glass, and at the same time reflects the light downward and in a horizontal direction, which prevents its useless dispersion in the space above, but throws it down and outward where it is needed. The glass can be taken out and replaced from above very readily to be cleaned or renewed, as the cover is hinged and opens upward. It is lighted from below, through the opening in the glass.

J. G. Miner, of Morisania, Westchester Co., N. Y., is the inventor and manufacturer of this excellent improvement, who is desirous to sell rights, or fill orders for the same.

Conduction of Sound by Hydrogen and Air.

Professor Tyndall, in his first lecture on "Vibratory Motion," delivered at the Royal Institution, recently, showed a novel experiment, illustrating the very low conductivity which hydrogen possesses for sonorous vibrations. A bell, struck by clockwork, was placed under the receiver of an air-pump, and the air exhausted as perfectly as possible. It was stated that by applying the ear close to the glass a faint sound could still be heard. The exhausted receiver was then filled with hydrogen, when the bell was again heard to sound, although faintly. On pumping out the hydrogen all trace of sound entirely disappeared, even though the ear were placed close to the receiver. Hydrogen being about fifteen times lighter than air, it might be considered that sound would travel in an atmosphere of hydrogen as readily as it would in air exhausted to two inches barometric pressure. But on trying the experiment it was found that when two inches of air were passed into the receiver, it allowed far more sound of the bell to pass through it than did the full atmosphere of hydrogen, showing that conductivity for sound depended upon something more than mere density. It was then shown that sound travelled with almost the same ease through air exhausted to half its normal density that it did at the ordinary pressure.—*Chemical News.*

Eddy's Improved Oil Stoves.

The desire to substitute coal oil for the purposes of heating and cooking in the place of other fuel has given rise to various devices intended to accomplish this object, with more or less success.

The accompanying engraving illustrates one of the most important and popular improvements in this line. It consists of a small, flat, oval heating chamber or stove, resting upon three legs, as represented, with one or more holes, into and upon which are introduced the various cooking vessels, boilers, pans, spiders, bakers, etc., in which the heating or cooking is to be done. A pipe is attached at the side of the chamber to conduct away the heated air and produce a draft. This is surmounted by a ring and tripod to sustain another cooking vessel. Underneath the stove is the lamp as fully shown, containing one, two, or more flat-wick tubes and ratchets for regulating the combustion.

The principal improvement in this apparatus consists in attaching the cone and blower to the stove itself, which conveys all the heat to the stove when it is needed, and keeps the oil reservoir or lamp cool and dry. These devices, with the chimney, causes a strong draft, which creates a clear white flame with intense heat.

Kerosene requires a draft for perfect combustion, as well as coal and wood, and a chimney is as necessary to a Kerosene Lamp Stove as to a furnace or a coal stove, or a range.

The new burner and stove is so arranged as to allow the oil reservoir or lamp to slide in and out conveniently upon a platform supported by the feet, as fully shown in the engraving.

EDDY'S IMPROVED OIL STOVES.

These oil stoves give great satisfaction, being cheap, convenient, cleanly and rapid in operation; superior for summer use, and valuable in all seasons. They are, in fact, regular cooking stoves, use range furniture, and are fully equal to either coal or wood stoves for boiling, frying, stewing, baking, etc.

These stoves are made of various sizes, from 0, or nursery size, which sells for $3.75, up to the size No. 2, or range size, at ten dollars.

Messrs. Moore & Nichols manufacture and sell these useful things, at No. 45 Dey street, where further information can be obtained.

—The finest Bank Note engraving in the world is done in New York. The American Bank Note Company supplies half the world with paper money to order.

The Water Supply of Our Great Cities.

BY REV. JOHN W. MEARS.

[Published by order of the Water Committee of the Councils of Philadelphia.]

But London, in abandoning the Thames and the Lea, will be obliged to undertake works many times the extent and expense of those of Glasgow. We need not add to what we have already written on this part of the subject. The line of aqueduct from the proposed basins or artificial lakes in Wales, is calculated at one hundred and seventy-one miles long, and the cost, when the works are completed, at between ten and eleven million of pounds sterling.

Such vast works being undertaken by cities, past which flow great streams of naturally good water, and such seemingly narrow sources of supply at a distance being exchanged for greater ones near at hand, may well relieve of all appearance of singularity the proposal of our Chief Engineer to abandon both the Schuylkill and Delaware rivers, and to have recourse to the trifling rivulet, Perkiomen.

Three conditions enter necessarily into the question of a water supply for a great city—abundance, purity, and cheapness. Abundance certainly we have at our doors. The rivers Delaware and Schuylkill could not only supply, but drench and drown a city equalling in population the combined totals of all the great cities of the world, for indefinite ages to come. So too would the Clyde have sufficed for Glasgow, or the Tiber for Rome, or the Seine for Paris, so far as the mere question of quantity is concerned. If, however, the abundant supply has become unfit for use, it must be allowed to roll on past our very doors untouched, while we look to remoter sources for the needed element. This is the fact in the cases named, and is tending to become so more and more. Rivers are the natural sewers of all thickly settled agricultural regions. Into their channels, as to the lowest levels of the regions, drains almost everything that can take a fluid form. The better the habits of the people, and the stricter the sanatary regulations of the river towns, the more foul becomes the condition of the river. Civilization and culture are incompatible with the drinkable character of river water.

The process of corrupting the waters of the river Schuylkill is steadily going forward with the increase of population and manufactures on its banks, and of tillage of the territory which it drains. It would be interesting to identify and combine, in one view, the various sources of impurity which discharge their corrupting contents into its channels, and make a sewer of that which is the very fountain of our life We should have to commence with the sulphurous discharges which flow from the coal mines around its head-waters, in a vast and poisonous volume, destroying all the animal life within their reach. This source of impurity, however, is partially neutralized by a beautiful provision of nature. Just about seven miles above Reading, the bed of the river is crossed by an immense stratum of limestone, which supplies a base for the action of the free sulphuric acid in the river, the resulting combination being the innocuous and easily deposited sulphate of lime. Yet, all traces of the acid do not disappear below the limestone. Even now its presence may be detected in Fairmount dam. And if mining operations around the head waters of the Schuylkill continue to increase, the enlarged quantity of the acid may be expected to produce perceptible and deleterious results in the water as we drink it.

But there is no provision to neutralize the fast increasing sewage from large towns like Reading, Norristown, Pottsville, Pottstown, Phœnixville, Hamburg, and others; or from manufactories of every kind, including not only every sort of iron works, but dye works, chemical works, gas works, print works, paper mills, cotton and woolen factories, etc., etc., some of them discharging the most noxious and offensive matters into the waters. And not only the main stream, but every available tributary, as Wissahickon and Mill Creek, are thronged with these sources of impurity.* Not only the waste liquids, but all refuse matter from these establishments are either thrown directly into the river, or so placed as to be carried off at the first rise of the water. Many factories are located on the river-bank, expressly for the opportunity it affords of getting rid of their refuse matter.

And one of the guiltiest parties to the work of wilfully corrupting the stream, is the city itself which drinks it. Several *common sewers* in Manayunk open directly into the river, and the gas works in that district belonging to the city, is also permitted to give the same direction to its refuse. Even coal oil refineries are tolerated as close to Fairmount as the foot of Girard and Columbia avenues.

Abandoning the Schuylkill as hopeless, and turning to the Delaware, we find a stream much more difficult to corrupt from its great size. Its waters do, indeed, already supply a portion of the city, and are at present drinkable and wholesome. If we abandon the Schuylkill, why not turn to the broad Delaware? So far as the existing quantity and quality are concerned, we might. And perhaps such a possibility as the corruption of the waters of that great stream, at any future time, is not to be regarded as of the slightest practical moment. But here enters the question of expense. The waters are here in abundance, indeed, but they must be distributed, and in order to be distributed, they must be elevated, and to be elevated they must be pumped. The expense of pumping so many million gallons of water a day to such a height, including interest on the cost of the works, is a simple problem, and has often been calculated. The Chief Engineer, in his peliminary survey, tells us that to supply seventy-five million gallons per day, (more than double the present amount,) by pumping, would cost over a million of dollars a year. Other considerations being the same, this question of expense would decide for or against pumping. It might appear advantageous in a pecuniary point of view, to leave the pure and great stream at our doors, and to go miles away, as did Rome and Glasgow, to the smaller source. GRAVITATION is the cheap substitute for pumping. Give us an elevated and abundant source of water, at a reasonable distance that will distribute itself, without expense, when once brought into connection with our dwellings and places of business, and it actually becomes a matter of economy to go abroad for what seems so abundant, right at our doors. The longest way around is in this case the nearest way home. In short, the Delaware river, viewed as a water supply, is an elephantine gift, which we cannot control or utilize with any degree of economy. To procure it by gravitation, we should have to build an aqueduct a hundred miles long. The Chief Engineer shows us how, by leaving it and the Schuylkill thirty-five miles in the rear, he can supply us with seventy five million gallons of pure water per day, at a saving of $218,000 per annum, as compared with pumping.

THE PERKIOMEN AS A SUPPLY FOR PHILADELPHIA.

As the Schuylkill river is growing more and more corrupt, and as either the Schuylkill and Delaware water would have to be pumped by expensive machinery to make it available for distribution, the citizens of Philadelphia have no alternative in securing an abundant, pure and cheap water supply for the future, but to abandon both these rivers, and look for a source as near at hand as practicable, from which, by gravitation, the needed amount may be procured.

Now, Philadelphia is highly favored in being almost entirely surrounded with a well-watered rolling country, rising, in some directions, into heights far above the level of its built up portions. Streams of considerable volume rise in these high regions, and fertilize and give beauty to the picturesque valleys between. A dozen or more of these rivulets—they would be dignified as rivers, and their banks would be adorned by the castles of the nobility, and all the charms of poetic and classic imagery would be connected with them if they were in England—a dozen or more of them, tributaries of the Delaware and the Schuylkill, rise and flow sufficiently near to the city to attract the eye of an engineer charged with the problem of supplying its population with water. Let us glance at these streams and test their capacities.

The Chief Engineer charges himself, in his peliminary survey, with the examination of all of these streams, which seemed to promise any important results. Commencing with tributaries of the Delaware, his report embraces remarks and suggestions upon the head waters of the five familiar streams, whose mouths are successively passed as we descend from the mouth of the Schuylkill to the mouth of the Brandywine, viz., Cobb's, Darby, Crum, Ridley aed Chester creeks. They may all be classed together as of the same general character. With them, too, might be joined the classic waters of the Brandywine, which he does not mention. This stream, though further off in its general course than the others, yet stretches with its head waters far toward Valley Forge.

(To be continued.)

* Peliminary Survey, pp. 10, 11.

Smelt Your Own Copper Ores.

It is one of the encouraging signs of the times, says the *Mining Press*, to observe the growing disposition of the copper miners on this coast to smelt their ores, either at the mine or at some convenient locality, and ship *regulus* instead of ore. There is no doubt but that, with all the drawbacks which appertain to California with regard to high-priced labor, lack of good furnace material, high cost and inferior quality of fuel, etc., we shall yet be able to make the smelting of the sulphuret ores into regulus, and the carbonates and oxides into 90 or 95 per cent copper, a profitable operation. With the projected increased facilities for transportation, and the influx of population, labor will gradually approach more nearly to the average of other countries; while closer observation will yet reveal to us better furnace material than any yet obtainable, and possibly a better quality of coal—all, or any of which advantages, will add gradually to the economy and profit of copper smelting, until we shall be able to produce that metal at a price and in quantities by which it can be successfully introduced into the great markets of Europe and Asia. The richness and extent of our mines, over those of any other country, will always be in our favor, and other things being equal, we must eventually control the copper market of the world.

It is well known that the yield of the copper mines of Great Britain has fallen off so rapidly of late that the smelting works of that country are in a large, if not the largest measure, dependant upon the product of the foreign mines. It has, moreover, been recently ascertained that at the present ruling prices of copper ores, the *smelters* are having it all their own way, and are getting rich at the expense of the mine owners. So palpable has this fact become, that the mine owners of England are calling upon the capitalists of that country to employ some of their surplus money in opening up new mines and extending the work of old ones, with the view of *smelting their own ores*—alleging that a mine that will smelt its own ores can be made to pay a handsome profit, when the same mine would run in debt if it was compelled to sell its ores to the smelters. —*Alpine Miner.*

Expense of Running Peat Works.

The laborers employed, and the cost of labor for manufacturing peat fuel will doubtless be an item of interest to those investigating the subject.

At the works of the Boston Peat Company, at Lexington, Mass., they have been as follows, for 100 tons crude peat per day:

Four men to cut the peat from the bog and load it into cars; one boy, one horse and two cars to haul (on a tramway) from the bog to the mill; one man to feed into the mill; one man to put moulds into the mill; two men to take moulds from the mill; one boy, one horse and three trucks to remove the moulds (filled with peat) to the spreading ground; two men on the spreading ground to empty the moulds; one boy to receive the moulds as they come back from the spreading ground; one engineer and one superintendent.

This comprises twelve men, three boys and two horses.

Ten of the men are paid	$1.75	per day	.....	$17 50
The engineer is paid	2.50	"	"	2 50
The superintendent is paid	3.00	"	"	3 00
The three boys are paid	0.75	"	"	2 25
For the two horses we pay	1.25	"	"	2 50
				$27 75

In addition to this, the blocks of peat require to be "haked" or turned once while on the spreading ground, which is done by boys; and the dry fuel is to be gathered up and placed under shelter, which can easily be done by two men; and occasionally an extra man or boy may be wanted about the premises—all of which is considered to be *more* than covered by $10 per day..... 10 00

Giving as a total cost for labor on each day's yield of, say 25 tons or more, of merchantable fuel.....$37 75

The cost as above stated, is for the product of one set of machinery; but, where several machines are to be operated in one establishment, and the business is to be conducted on an extensive scale, the cost *pro rata* will be very much reduced—as one man can easily superintend several machines—the laborers generally can be employed to better advantage, and numerous mechanical appliances to save manual labor and expedite the operations, which it would not be advisable to construct where a single machine only was to be run, may be economically introduced on more extensive works; and in this manner it is quite probable that the expense may be reduced to one dollar and twenty-five cents per ton, and some have estimated as low as one dollar per ton. The profit of such an establishment will therefore be largely in excess of smaller works.—*Leavitt's Peat Journal.*

On the Analysis of Coal Gas.

[From "Clegg on the Manufacture of Coal Gas."]

[Concluded.]

V. Estimation of the Value of the Luminous Constituents.

We have now given methods for ascertaining the respective quantities of all the ingredients contained in any specimen of coal gas, but the results of the foregoing analytical operations afford us no clue to its illuminating power. They give us, it is true, the amount of illuminating hydrocarbons contained in a given volume of the gas, but it will be evident from what has already been said respecting the luminiferous powers of these hydrocarbons, that the greater the amount of carbon contained in a given volume, the greater will be the quantity of light produced on their combustion; and therefore, as the number of volumes of carbon vapor contained in one volume of the mixed constituents, condensable by anhydrous sulphuric acid, has been found to vary from 2·54 to 4·36 volumes, it is clear that this amount of carbon vapor must be accurately determined for each specimen of gas, if we wish to ascertain the value of that gas as an illuminating agent. Fortunately this is easily effected, for if we ascertain the amount of carbonic acid generated by 100 volumes of the gas in its original condition, knowing from the preceding analytical processes the percentage of illuminating hydrocarbons, and also the amount of carbonic acid generated by the non-luminous gases, we have all the data for calculating the illuminating value of the gas. For this purpose a known volume of the original gas (about one cubic inch) is introduced into the explosion eudiometer, and mixed with about five times its volume of oxygen, the electric spark is passed, and the volume of carbonic acid generated by the explosion ascertained as above directed. If we now designate the per centage of hydrocarbons absorbed by anhydrous sulphuric acid by A, the value of carbonic acid generated by 100 volumes of the original gas by B, the carbonic acid formed by the combustion of the non-luminous constituents remaining after the absorption of hydrocarbons from the above quantity of original gas by C, and the volume of carbonic acid generated by the combustion of the luminiferous compounds (hydrocarbons) by x, we have the following equation:

$$x = B - C$$

and therefore the amount of carbonic acid generated by one volume of the hydrocarbons is represented by

$$\frac{B - C}{A}$$

But as one volume of carbon vapor generates one volume of carbonic acid, this formula also expresses the quantity of carbon vapor in one volume of the illuminating constituents. For the purpose of comparison however, it is more convenient to represent the value of these hydrocarbons in their equivalent volume of olefiant gas, one volume of which contains two volumes of carbon vapor; for this purpose the last expression need only be changed to

$$\frac{B - C}{2A}$$

Thus, if a sample of gas contain 10 per cent. of hydrocarbon, of which one volume contains three volumes of carbon vapor, the quantity of olefiant gas to which this 10 per cent. is equivalent will be 15.

By the application of this method we obtain an exact chemical standard of comparison for the illuminating value of all description of gas; and by a comparison of the arbitrary numbers thus obtained, with the practical results yielded by the same gases when tested by the photometer, much valuable and useful information is gained.

Estimation of the Specific Gravity of Gas.

Although the mere determination of the specific gravity of gases is of very little use as a test of their commercial value (unless the gas is to be used for ballooning), yet, as it is still much employed by gas engineers, and as such an estimation is occasionally useful for controlling the results of the chemical analysis, a method by which the specific gravity of gas can be readily and correctly determided is here subjoined.

The specific gravity of gases should be taken in a room where there is no fire, and where the temperature is liable to little variation during the time occupied in the operations. The following apparatus is necessary: First, a thin glass globe, capable of holding at least 200 cubic inches, and furnished with a brass cap and stopcock, so accurately fitted as to prevent all ingress of air when the globe is exhausted; secondly, a small exhausting syringe, or air-pump, to which the above globe can be screwed air-tight; thirdly, a balance, capable of weighing to one fiftieth of a grain, when loaded with a quarter of a pound in each pan; fourthly, a glass tube, eighteen inches long, and half an inch diameter, filled with fragments of fused chloride of calcium, and closed at each end with a cork, perforated with a piece of glass tube of such dimensions as to be capable of being adapted, by caoutchouc joints, at one end to the exit-pipe of a small gas-holder, and at the other to the stopcock of the glass globe. The process consists in ascertaining the weight of equal volumes of atmospheric air, and the gas under investigation at the same temperature and pressure. This is accomplished by first exhausting the globe by means of the syringe or air-pump, and then accurately ascertaining its weight, care being taken to allow time for the globe to assume the same temperature as that of the air surrounding the balance. The globe should then be connected with one extremity of the chloride of calcium tube by means of a piece of vulcanized caoutchouc tube, and the stopcock being then very slightly opened, the air passing through the chloride of calcium tube should be allowed slowly to fill the globe; thus the air, in its passage through the fragments of chloride of calcium, becomes thoroughly deprived of watery vapor. The globe should now be detached from the drying tube and replaced in the balance, where it should remain undisturbed for at least five minutes; the stopcock should be now opened for a moment, to equalize the pressure within and without, and the weight then accurately determined. The difference between the two weighings gives the weight of the air enclosed in the globe. The chloride of calcium tube should now be attached to the exit-pipe of the gas-holder, and a stream of gas allowed to rush through it until every trace of air has been expelled from the interstices of the chloride of calcium; the globe, again exhausted is then to be attached to the other extremity of this tube, and and the stopcock being slightly opened as before, the gas, perfectly dried in passing over the chloride of calcium, is allowed slowly to fill the globe, which should, whilst still attached to the drying tube, be allowed to stand undisturbed for a few minutes near the balance, before the stopcock is finally closed and detached from the drying tube. The weight of the globe thus filled with dry gas is then ascertained, and that of the exhausted globe being subtracted from it, the difference gives, of course, the weight of the gas. We have now the weight of equal volumes of gas and atmospheric air at the same temperature and pressure, and the weight of the former divided by that of the latter is the specific gravity of the gas. Thus, suppose the weight of the exhausted globe to be 2000 grains, that of the globe filled with dry air 2060 grains, and with dry gas 2040 grains; the weight of the volume of air equal to the contents of the globe would be 60 grains, and that of the same volume of gas 40 grains, hence 40-60 = 6666 = specific gravity of gas; that of air being taken as unity.

Unless a number of specific gravities are determined at the same time, it is indispensably necessary to ascertain the weight of the air contained in the globe previous to each determination. Care should be taken that the temperature of the room in which the balance is placed does not vary more than about one degree between the several weighings of the globe, as otherwise a considerable error will be introduced into the experiments. The globe should also be protected, as much as possible, from the heat radiating from the body of the operator during the several weighings.

A continuous indicator of the specific gravity of gas has been proposed. A light glass balloon is suspended from one end of an oscillating beam under a glass vessel having an inlet and outlet for gas; variation in the specific gravity of the gas causes the balloon to rise or fall, a movement indicated on a properly graduated scale over which the opposite end of the beam moves.

The following analysis is given in "Watt's Dictionary of Chemistry" as that of a first-rate sample of gas. It was prepared in Manchester from cannel coal.

Hydrogen	45·58
Marsh Gas	34 90
Carbonic Oxide	6 64
Olefiant Gas	4·08
Butylene (Tetrylene)	2·38
Sulphuretted Hydrogen	0·29
Nitrogen	2·46
Carbonic Acid	3 67
	100·00

On the Igniting-Point of Coal-Gas.

Coal-gas cannot, even under the most favorable circumstances, be inflamed at a temperature below that necessary to render a rod or iron perceptibly red-hot by daylight in a well-lighted room; though this temperature, it must be remembered, is considerably below visible redness if the rod be viewed in the open air even though the day be a dull one. It is true that one of the constituents of gas, bisulphide of carbon, is inflammable at a temperature so low as 300° Fahr., and renders carbonic oxide and hydrogen far more easily inflammable than is normally the case; but the presence of olefiant gas and other luminiferous hydrocarbons in coal-gas prevents any depression of the igniting point.

The temperature of a spark struck from metal or stone by the tool of a workman or shoe of a horse is even higher than that necessary to ignite a jet of ordinary coal gas, though not high enough to ignite an explosive mixture of the gas of coal mines; this is because mine-gas is light carburetted hydrogen only, a body that requires a temperature equal to that of white hot iron for its ignition, while coal-gas contains hydrogen and carbonic oxide, which are inflammable by iron visibly red-hot in the daylight of a well-lighted room. Sparks from iron or stone are visibly red hot, but not white hot. A body inflammable at a low temperature may of course ignite other bodies which are only inflammable at a high temperature.

Useful Recipes.

Cement for Leather.—Common isinglass melted in water as an ordinary glue, with a little alcohol added and applied hot.

To Drive Away Rats.—Coal tar mixed with sand, to the consistency of thick mortar, is an effectual stopper to rat holes. Or rats may be driven off by catching one, soaking him in coal tar and letting him go.

A New Varnish.—By boiling shellac and borax in water a solution of lac is obtained, which may be used as a varnish or as vehicle for colors. Mixed with lamp black it has been used as an ink that will resist acids.

How to Polish Wood.—Take a piece of pumice-stone and water, and pass repeatedly over the wood until the rising of the grain is cut down. Take powdered tripoli and linseed oil and polish the work to a bright surface.

Bronze for Castings.—An excellent bronze for small castings may be made by fusing together in a closed crucible ninety five parts of copper by weight, and thirty-six parts of tin.

To Drill Glass.—Glass may be readily drilled by using a steel drill hardened and not "drawn" at all; run fast, with a sharp drill, wet with spirits of turpentine and feed light. The operation will be more speedy if the turpentine be saturated with camphor gum.

Frosted Limbs.—Make a boiled lye of wood ashes so strong as to be quite slippery between the fingers, let it settle, drain it off, put in a large handful of common salt to a quart of lye, have it quite warm to begin with, submerging the afflicted part for one or two hours—one or two applications affording permanent relief.

For Sores.—Four parts weight yolk of eggs, with five parts of glycerine, make an unctious compound of the consistency of honey, unalterable by the atmosphere and form an inoffensive covering for sore or injured parts, impervious to air, yet easily removed by water.

How to Make Nitro-Glycerine Non-Explosive.—A method for rendering nitro glycerine non-explosive, without permanently destroying its properties has just been discovered. It is not unlike Mr. Gale's method of mixing gunpowder with powdered glass, and consists simply in mixing the nitro glycerine with methylic alcohol, or wood naphtha. So long as the two substances remain together the compound is perfectly innocuous and non-explosive. When the nitro-glycerine is required for use, it is separated by washing the mixture in water, by which the naphtha is set free.

Poisoning by Strychnia.—The poison of strychnia is completely neutralized by nicotine. In a case of poison by the former, take a cigar and infuse it in a half pint of water, which give in doses of one tablespoonful every five minutes. Probably when half the quantity has been taken a favorable change will be noticed; the muscles will have become relaxed, the spasms less severe, and the intervals between them longer. The infusion may then be given less frequently. Of course, in healthy persons, such quantities of tobacco, internally administered, would produce serious effects; but in this case its effects are antagonized.

New Methods for the Preparation of Oxygen.

[From the Journal of Franklin Institute, June, 1867.]

From various publications lately made by the Abbé Moigno, in his own *Journal les Mondes*, and in the *Chemical News*, for which he has lately become the regular Paris correspondent, we learn many interesting particulars in reference to the above subject. Thus, in the first place, he informs us that a company, under the name of Jose de Susini & Co., with a capital of $400,000 has been formed in Paris, for the manufacture of oxygen under the patent of M. Archereau. This process, which we have before described, consists in the decom position of sulphuric acid by heat, and the removal of the sulphurous acid by compression and consequent condensation, and by chemical absorption, leaving the oxygen in a pure state. The sulphurous acid is to be reconverted into sulphuric by the usual process of the leaden chambers. From twenty-four pounds of sulphuric acid, of a density 60° Baumé, which is about the condition of that drawn from the leaden chambers before concentration, a cubic metre or 35.3 cubic feet (=two hundred and sixty gallons) of oxygen may be obtained.

It is calculated that by burning the ordinary illuminating gas with oxygen or lime, the amount of illumination obtained with a given quantity of the former, is increased about eight-fold, as compared with its ordinary burning in the atmosphere; while the increase in cost, by reason of the oxygen supplied by the process above, would be about four times, showing a gain of one hundred per cent. This calculation we have modified from that of the Abbé, who allows but half a measure of oxygen to each measure of burning gas. This, we suppose, must be an oversight, as we know, from actual experience, that illuminating gas requires practically an equal volume of oxygen f r its thorough combustion. The practicability of the above plan on a commercial scale, as the Abbé remarks, has yet to be proved, and the above correction of the previous estimate does not improve the prospect of profit in the enterprise.

Another process, to which allusion has been made before, is that of M. M. Tessié de Mothay and Maréchier, of Metz. This consists in the superoxidatiou of the manganate of soda by a current of hot nir, and the deoxidation of the permanganate so formed by a curren$_t$ of steam. Each two and a half pounds of the salt will yield at each treatment about eighteen gallons of oxygen, and there is no waste of material. An apparatus working on this principle, and capable of yielding about one hundred and seventy-five cubic feet, or thirteen hundred gallons of oxygen per day, is being put up on the Champ de Mars, in a laboratory adjoining the lecture-room appropriated to the Abbé, where it will be employed, among other things, in furnishing gas for the illumination of that hall. The lamp employed in this case will be that of M. Carlevaris, of Genoa, in which a combined jet of illuminating gas, or of naptha vapor, with oxygen, is directed upon plates of magnesia and chloride of magnesium united.

Another process may well be recalled in connection with these two, although it has, we think, been mentioned before. It consists in exposing subchloride of copper (Cu2Cl) to the air, until it absorbs oxygen enough to convert it into the oxychloride (CuCl CuO), and again returning this to its original state, by the application of heat. This process, devised by M. Mallet, was lately introduced to the French Academy by M. Dumas. We observe, in the notices of the patents, that protection for this process is in course of being secured by its inventor, in England. Many years ago a plan analogous to the second of those above, in which protoxide of barium (Ba O) was first oxidized by air and heat, and then reduced by steam, was published and commended, but seems to have passed into oblivion without any (at least recorded) trial of its merits.

Gas Works.—The Board of Supervisers for Napa, (California) have passed an ordinance granting the franchise for fifteen years to some citizens who will supply that city with gas.

Destruction of Gas-Pipes by Rats.

We often hear complaints from consumers, that no matter how much they may diminish their consumption of gas, either as to number of lights or time of burning, their *gas bills* are the same; and this anomaly they attempt to account for by charging the gas company with fraud. If such things occur at all, may they not, in some cases, arise from the same or similar causes referred to in the following communication to the London *Gaslight Journal*:

As gas has become one of the necessaries of life, and superior to every other artificial light, and at the present rate of consumption doubles itself in every seven years, it behoves all of us to make it as secure from danger as we possibly can. I could give you several cases where gas-pipes haxe been gnawed away by rats and mice. I will give you one instance in particular. A short time ago I was called upon to examine a gas meter where the consumption had been three times as much as the corresponding quarter. I asked if they had increased the number of lights, or had larger burners put on, or if they had any escape in their fittings. Their reply was, the number of lights was the same, and they had no escapes. I then took the index of the meter and ordered them not to light the gas until my return. After a few hours' absence I again looked at the index of the meter and found it had registered 150 feet. Of course, they at once condemned a meter that would register whether the gas went through it or not. In order to convince them, I ordered all the pipes to be examined, and in the attic, where a pipe was laid, the rats had gnawed through it; there was plenty of ventilation, which accounted for the gas not smelling. About three years ago I had gas put in my room; the pipe was laid between the joists, and to my surprise I soon found out that the rats were constantly gnawing at it; it behoved me therefore to find out a remedy or give up the gas. I had the boards taken up and the pipes coated with coal tar varnish; the rats did not come for six months after. Although I can now often hear them gambolling about, I have not heard one nibble at the gas pipe. I believe if all gas managers would insist on their pipes being varnished, there would be fewer complaints from the public, and, what is better still, fewer explosions.

Water Supply for Valparaiso.

A new company, called the Valparaiso Waterworks Company (Limited) has been formed, and appeals for capital to the extent of $1,000,000. The shares are of $100, and the dates on which the different instalments must be paid up are specified. The object of the company is to supply the city of Valparaiso, in Chili, with water. It seems that Mr. Waddington, an Englishman, had obtained a concession as far back as 1856 from the municipality, which was approved of by the government in 1863, to bring water from the range of the Andes. Mr. Waddington had commenced to build a canal coming to the city by a circuitous route for the double purpose of supplying a reservoir and of irrigating the country. A length of seventy-two miles of the canal has already been finished. The company now formed has purchased that portion, with the concession, from a son of the concessionaire, and with whom also they have made a contract to complete the works. The contractor agrees to pay six per cent. on the capital during construction, in consideration of receiving any income derived from the works during that period. The price to be given to the concessionaire for his concession, and the portion of canal already completed, is $500,000 in fully paid up shares, after the whole undertaking has been completed. This amount of fully paid up shares is to be a fresh issue in addition to the capital of $1,000,000. The total net revenue derivable from the city and the irrigation is estimated at $381,020.—*London Builder.*

Wilde's Electric Light.

We learn from the English journals, says the *Scientific Press*, that Mr. Wilde is still engaged on his magnificent electro-magnetic light. His machine has been a great source of attraction to the curious and scientific during the past winter. The previous idea of the value of this wonderful discovery have in no wise abated by his recent and continuous exhibitions; and the possibility of turning the discovery of this new mode of the deve'opment of electricity to practical purposes, is more than ever confirmed.

The chief value of Mr. Wilde's discovery consists in ts completeness and power, which places it far in advance of the conceptions of any of his predecessors in that field of research. His machine is a compound one —a magneto-electric apparatus and an electric-magnetic one. The latter consists of a very large electro-magnet, which is charged by the former; the armature therefor revolving within the magnet cylinder, and abstracting twice in each revolution, the fullest quantity of power deducible therefrom. This electrical force, so gained, can be made to evolve light, heat or dynamical power, according to the construction of the armature.

When used for illumination, the light is given off from carbon points, half an inch in diameter, and generated from the electrical currents direct, without the intervening action of any commutator. The currents are therefore intermittent, or constantly being reversed, which, when the revolutions of the armature are slow, have a flashing appearance, clearly perceptible to the eye; but when driven at a high velocity—say 2,000 rotations of the armature—the flashings, numbering 4,000, are entirely imperceptible, and appear one continuous blaze of the most intense brilliancy. The first application of the invention will be to lighthouse purposes; but it is the intention of Mr. Wilde to immediately institute experiments with the view of giving his invention a wider range of usefulness—applying it probably to metallurgical purposes, and as a motive power. We shall watch its development with no little interest, and shall not fail to note any progress which may be made.

Miscellaneous Items.

Yielding Largely.—The Nevada *Transcript* says:—"The mines of the county are beginning to yield large returns. From a small mining camp, with not a score of inhabitants, $11,000 in dust was shipped in a single week, lately."

Eight Hours.—The Hale & Norcross mine, with commendable liberality, employ their miners, seventy in number, under the eight-hour system, working three shifts of men at four dollars per day. The consequence is that a large amount of labor is obtained for the same amount expended, the miners work with alacrity, and the general result is better.

—American Enterprise is making rapid headway in Japan. Among the latest proposals of Americans in that far off country is to light up both Jeddo and Yokohama with gas. There are besides projects for railways, telegraphs, and all sorts of improvements; and the Japanese seem to take to these new movements with great relish.

Coal Discovery.—The Oakland (Cal.) *News* mentions that a coal vein eight feet thick has recently been discovered in Alameda County, near the borders of San Joaquin County, about eight miles from the river, and four miles from the line of the Pacific Railroad. Coal has been known to exist in this vicinity for several years. A fine bed of gypsum, from six to seven feet wide, has also been discovered in the immediate heighborhood.

Rich Strike.—The Crown Point mine, Gold Hill, Cal. made a rich strike recently, in their east drift, from the 500-foot level. The ledge is about five feet wide, and is reported to be very rich. A miner who was working in the drift when the ledge was cut, rushed to a broker's office as soon as he could get out of the mine, and bought one foot of ground at $800. On the 8th the stock went up to $1,400.

Gas.—The Harwich Gas Company have declared a dividend of 9 per cent for the last year....At Dursley the consumption of gas has so largely increased that the directors are now fixing a new gasometer at the works. ....At Kingswinford a movement is in progress for the reduction of the price of gas from 5s. 5d. to 3s. 6d. The gas consumers have deputed a committee to act for them in the matter.—*London Builder.*

Gas for Vallejo.—H. W. Snow was in Vallejo recently, arranging to put down gas pipes on Georgia and Virginia streets, west of Marin. Mr. Snow represents the Ensley Gas Company, who manufacture gas from bones and pine wood, etc., and who proposes to supply the town with gas at $6 per 1,000 feet, and to donate to the town twenty-five street lights. Mr. M. P. Young is engineer and constructor of the Gas Works, and has entered into a contract with the company to have them in operation in ninety days. The company propose to expend some $25,000 or $30,000 at the present time.—*San Francisco Daily Call.*

Peat Among the Gas and Petroleum Springs.

Upon examination and comparison of the essential and elemental properties, and consequent values of the widely varying peat deposits of different sections of the country, we cannot fail to notice the very apparent effect of petroleum and the olefient and carburetted natural gases abounding in the extreme western portion of New York, in the confines of the great oil regions, as effecting the peat formations of that region, viz., in Chatauque County, N. Y. Here those oleaginous productions are found almost anywhere you choose to dig for them, in larger or smaller quantities.

Here those inflammable gases have been perpetually seeking vent from the pent prison-house far down in earth's recesses, and finding escape from the surcharged strata below, alike into the receptive and assimilative peat-beds, and through or out of the rocky bluffs and beds of creeks and rivers; with this difference, however, that whereas the gas escaping through the crevices of the rocks, passes off into the air, or is seized upon and conveyed into reservoirs, for the town, village or lighthouse illuminator, the absorbent peat-bed undertakes the assimilation of these consanguined elements into a tangible fuel and gas-producer—in fact into a first-class competitor of coal in nearly every department of its consumption.

Here is a belt of country skirted by the Pennsylvania Oil Regions on the south and Lake Erie on the north, in which several villages are already—and others might and will be—lighted by the boundless supplies of natural gas which underlies these localities, and the gas bills are a clear profit to the company, except for expenses for receivers and fixtures, for it is burned in its natural state—in virgin purity. Westfield, N. Y., finished her complete natural gas works last winter.

Throughout this region oil springs have been found from the earliest settlement of the country. The variously termed "rock oil," "Seneca oil," "coal oil," "petroleum," has been running off these many ages past, into the low lands and peat-bogs, and except the small proportion carried down our streams and rivers in high water floods, this generous contribution from earth's great laboratory—the concentrated essence of combustion—becomes the very aliment whereon is fed the peat formation. Now the grand result becoming apparent in the discovery of this assimilation, and this accumulation of values held in trust for man's use, proves also Nature's vindication from the apparent lavish waste of her substance, while perpetually adding this invaluable component to our peat formations, until we are furnished with an article unsurpassed for producing gas, generating steam, for locomotive and manufacturing, and for domestic purposes.

It may not have occurred to the reader how powerful are the chemical affinities of peat for these coal oils and gases, and the consequent readiness with which it absorbs and assimilates these elemental constituents of the best peats, instead of expelling them upon the waters of every freshet, as might seem the case at first thought, and has, indeed, been alleged, without due reflection. Chemical analysis of these deposits has exploded these false premises, especially as applicable to the particular region above referred to, and it is presumable that the composition of peat would give it universally this affinity. But where these essential elements are so liberally furnished and converted into its substance, we have an article of peculiar value for heating purposes, the very double distilled spirit of fire, and that too in the most convenient locations and convenient form for immediate use and availability, and believed to be superior to the best coals for gas production.

These deposits of peat "in the cool forests of Western New York,"—spoken of in Benham's little work on peat, page nine—are located at an altitude of eight hundred feet above the level of Lake Erie, distant therefrom some twenty miles, more or less, and invariably located on streams and valleys running southward, through oildom, and finally discharged into the Gulf of Mexico. Those streams are navigable for arks, flat-boats and barges to the Alleghany, the Ohio, etc. Now for what results from all this, we have reason to be profoundly grateful, viz., our independence of the coal monopolies that have so long oppressed us.

Your invaluable book and paper have done more than all else to bring about this emancipation. The poor especially will be grateful that relief has come at last. Yet the inhabitants have not learned to put any adequate value upon this treasure. It can now be bought up at nominal prices, and the time is near at hand for the just appreciation of these inestimably useful deposits.—*Leavitt's Peat Journal.*

Carbonic Oxide.

This is the lowest state of oxidation of carbon; it contains one equivalent or twelve parts by weight of carbon, and one equivalent or sixteen parts by weight of oxygen. This gas is formed when carbon is consumed in a limited quantity of air or oxygen, and is also generated, as previously stated, when steam is passed over ignited coke or charcoal, or when coal-tar and steam meet in a red-hot vessel. It is always a constituent of coal gas in the proportion of five to fifteen per cent.

Carbonic oxide is a colorless and inodorous gas, rather lighter than atmospheric air, and having exactly the specific gravity of olefiant gas, ·9727; it is very sparingly soluble in water, but is very soluble in an ammoniacal solution of subchloride of copper. Carbonic oxide is inflammable, burning with a beautiful blue flame, almost devoid of illuminating power. The product of its combustion is carbonic acid. One cubic foot at 60° Fah. and 30 inches barometric pressure, consumes during combustion half a cubic foot of oxygen, generates one cubic foot of carbonic acid, and yields heat capable of raising 1 lb. 14 oz. of water from 32° to 212° Fahr., or causing a rise of temperature from 60° to 66.6° Fahr. in a room containing 2,500 cubic fee of air. Carbonic oxide is very poisonous, two per cent. of it in air being fatal to small animals.

Gold Mines in Brazil.

The continued success of the St. John del Rey Mining Company, and the recent valuable discoveries at the mines of the Don Pedro North del Rey Company, have naturally caused Brazilian gold mining to be looked upon with much favor; and a prospectus has now been prepared by the Rosa Grande Gold Mining Company, for the issue of 30,000 remaining shares, to complete the authorized issue of £100,000. Although the company was established about three years and a half ago, legal possession of the property has only just been obtained, but the interval has been utilized by the erection of a 12-head stamp-mill, and in carrying out certain preparatory works. A resident superintendent is to be at once appointed, and instructions have been sent out to the mining captain to devote his whole time to the laying out and development of the company's mines. Attention will also be turned to the unexplored jacotinga formation; and, considering its close proximity to the celebrated Gongo Soco lode, satisfactory results are confidently looked forward to. The road from Gongo Soco to the St. Juan del Rey Company's mines, and to the city of Sabara, passes through the estate; and in reporting upon the property Capt. Thomas Treloar states that the Rossa Grande is one of the famous mines of the district of Minaes Geraes, and its reputation arises from its fourfold advantages, of rich auriferous lodes, good water power, extensive forests, pastures and arable land, with convenient position for labor, materials and provisions.

With regard to the character of the rock, Capt. Treloar considers it highly congenial to auriferous formations; the lodes moreover, are not far distant from the junction of the slate and granite; and as the gold mines in Brazil, as well as copper and tin mines in England are valueless when very far from the mysterious effect of the junction of these two great rocks, the significance of the statement will be readily understood by practical miners. As Captain Treloar has known the Rossa Grande property for the last twenty-eight years, and has a large practical experience of the district, having been sixteen years chief mining engineer to the St. John del Rey, and now holding a similar office in connection with the Don Pedro North del Rey and the Anglo Brazilian Gold Companies, his opinion cannot fail to be worthy of consideration, and as Messrs. Henry Haymen and Robert Hesketh, directors of the Don Pedro Company, have joined the Rossa Grande board, no doubt need be entertained but that the property will be energetically developed.

Arrangements have been made for transferring the agency of this company to Messrs. John Moore & Co., of Rio, and Messrs. J. Bramley Moore & Co., of Liverpool.—*London Min. Journal, June.*

Recent Inventions.

A Crude Oil Lamp—Important Invention.—We have received from our fellow townsman, Mr. Joseph Barnsall, a new patent lamp for burning crude petroleum. It consists in the use of two metallic cylinders, one within the other, passing through the centre of the lamp, and between the cylinders is a circular wick connecting with the oil below. The inner cylinder is open at the top and bottom, and through this, when the chimney is placed upon the lamp, a current of air is drawn up, which feeds the inner surface of the ring of flame, the outer surface being supplied by the air passing through a brass ring perforated with holes, as in the ordinary lamp. A flat ring with a round hole in the centre, placed directly over the flame, contracts it and the flame passes through very much intensified, and if properly adjusted, without any smoke. This lamp is a decided improvement over the ordinary petroleum lamp, and it is claimed that crude oil may be burned in it with perfect safety. It is designed to work a great revolution as an illuminating apparatus. —*Mining Gazette.*

A Very Useful Invention.—Mr. Fred Kohler, of San Francisco, has invented a simple, but in view of the many accidents that occur with lamps, a very useful invention. He calls it a lamp extinguisher. By pressing a small lever outside of the lamp the flame is at once extinguished, and the wick left in good order for relighting. Many of the lamp explosions we read about are caused by blowing down the chimney to put out the light, or by turning the wick down suddenly. By this simple process all danger is avoided. It is an inexpensive arrangement, and can be applied to any coal oil lamp in a few minutes. Mr. Kohler has applied for a patent for the invention.

Newly Invented Carriage Springs.—That enterprising and inventive mechanical genius, E. P. McCarthy, of San Francisco, has just perfected a new invention, which must commend itself to all who use carriages or spring wagons. It is a spring made of only two bars of steel, an upper and a lower, in the shape of the ordinary eliptic spring. In the centre or arc of the spring is a ball of India rubber which fits into brass caps, and through which a bolt runs down into the under support of the spring. This ball acts both as a spring and a support. The advantage claimed for the new invention over all others is, that it makes a lighter, stronger, cheaper, and neater spring than any now in use. A well known mechanical gentleman of that city has taken a half interest in McCarthy's invention, and it will be immediately introduced into all the States and Europe. It is strongly endorsed by practical men.

Useful Invention for Cars.—Leon J. Fremaux, of New Orleans, has invented a machine to be placed in street cars, to indicate to passengers the name of each street as the car moves along. From its appearance it is a very remarkable invention—very simple and yet perfect. It has a dial like that of a clock, with the name of each street along the route painted on it. As the car reaches a corner, a small iron wedge fastened to the track touches a spring at the bottom of the car, and this revolves the dial and points out the name of the street. It is certainly a very ingenious contrivance. This indicator can be used equally as well on regular railroad routes to give the name of stations. The managers of the different lines of street railways in this city might, with advantage introduce this invention.

Mining Share Market.

The San Francisco Weekly Stock Circular of June 15, gives the market rates of mining stock as follows:

The very decided upward tendency of mining shares during the past week is a sufficient explanation of the increased productiveness of the Comstock lode, and though most shares may be somewhat higher than their intrinsic value, we may safely look for a continuance of the present activity. The sales have been larger than ever before, and it is exceedingly gratifying that "wild cat," as in former times, is no feature whatever of the market.

SAVAGE—has been sold at a marked advance since our last reference, opening at $3,800, rapidly improving to $4,500.

HALE & NORCROSS—has been offered at $3,300. We learn of no material change in this mine. On the 7th instant the shaft was down 430 feet.

YELLOW-JACKET—has been sold at greatly improved figures, and exhibits considerable firmness at the close, opening at $1,800, advancing to $2 030, and closing at $2,000. We are informed that the developments in the lower levels of this mine are very flattering, particularly in the north mine.

CROWN POINT—also shows a material advance over closing sales of last week, improving from $1,680 to $1,900, and closing yesterday at $1,975.

GOULD & CURRY—suddenly took an upward tendency, but declined as rapidly, advancing from $540 to $850, dropping to $600, then selling at $650, and at the close obtaining $680.

CHOLLAR-POTOSI—has been in rather less favor, declining from $540 to $465, rallying to $500, receding to $470, and closing at $480.

KENTUCK—exhibited considerable activity at enhanced rates, during the week under review, opening at $455@475, then selling at $450, ex-dividend, advancing to $500, seller 3, and closing at $545. The bullion returns from the 1st to the 11th instant aggregated $22,-832.17.

BELCHER—also shows a very decided improvement, gradually advancing from $400 per foot to $490, and closing yesterday at $545....OPHIR has been largely dealt in, at fluctuating rates, advancing from $270, seller 3, to $360, falling to $320, rallying to $350, and closing at $325.

IMPERIAL—has been sold at a considerable decline, gradually receding from $197 50 to $185, rallying to $190, and at the close selling at $205. b. 3. The first clean-up of the Rock Point mill for the current month aggregated about $13,000 in bullion. A dividend of $10 per share is payable to-day.

PATENT CLAIMS.

Pertaining to Gas, Mining, Petroleum, Water etc.

FOR THE TWO WEEKS ENDING JULY 16, 1867.

66,203—LAMP BURNER—Philander Baker, Chicago Ill.

I claim, 1st. The combination and arrangement of the disk, e, and safety-plate or diaphragm, h, when connected at their perimeters by a spiral coil, or its equivalent, as described, with the two sections of the wick-tube arranged as specified with respect to each other, and the cone, i, arranged and operating as and for the purposes set forth.

2d. In combination with the elastic arms, l, I claim the arrangement of the spring-hook, k, constructed and applied so as to operate in the manner and for the purpose specified.

66,224—WASHING MACHINE—Samuel Davis, Kansas, Missouri.

I claim the combination as well as the arrangement of the annular suction-ring or board, O, with the perforated or grated plunger B, and the application of the plunger to its working lever, C, by means of a swivel connection, in order to enable the plunger to revolve while in use, the whole being substantially as described.

66,225—HYDRANT.—W. P. Diskinson, D. S. Whitman, and G. W. Robold, Reading, Pa.

We claim, 1st. Valve' M, in combination with its lubricator recesses and holes, discharge-hole, m, and constructed and arranged in the manner and for the purpose above described.

2d. The combination of valve, M, lubricator recesses and holes, f f f, valve-rod, K, and key-rod, R, globe-case, A, and goose-neck, D, constructed, arranged, and operating together in the manner and for the purpose above described and set forth.

3d. The key-rod, R, combined with valve-rod, K, by means of a cogged lever and five-teeth pinion, as above described and for the purpose above set forth.

66,226—STOVE FOR CARPENTER'S USE.—Henry Dietz, N. Y. City.

claim the construction of a carpenter's stove by the combination of angle irons and sheet iron together with fire brick or soapstone lining, in the manner and for the purpose substantially as described.

66,226—PRESSURE GUAGE FOR GAS-FITTERS.—R. B. Donaldson, Washington, D. C.

I claim a gas-fitter's pressure gauge, constructed by combining the base, A, containing the reservoir, h, elastic bottom, c, and socket, a, with the shank of the tube, B, in the manner and for the purpose set forth.

66,230.—WATER INDICATOR FOR BOILERS.—Ambrose G. Fell, Brooklyn, N. Y.: assignor to himself and William Bell, New York City.

I claim the construction of a water indicator for steam generators, having one or more sides of mica, substantially as and for the purpose set forth and described.

66,256—DRY GAS-METER.—John Schatt, assignor to himself and Samuel P. Mervine, Jun., Philadelphia, Pa.

I claim attaching the leather, B, and the ring, A, together by means of the single cord, C, and the groove, a'', closed tightly over the said cord and leather, substantially in the manner described and for the purpose specified.

66,266.—THERMOMETER.—Lewis C. Tower, Rochester, New York.

I claim, 1st. A thermometer whose frame is made from a single piece of sheet-metal corrugated as described to give it stiffness and provided with a groove and socket to receivt the tube and bulb, substantially as herein set forth.

2d. The combination of the sliding shield, d, with the frame, A, and bulbs, a, as and for the purpose specified.

66,320—MANUFACTURE OF CLAY PIPES.—Horace A. Goodrich, Joliet, Illinois.

I claim, 1st. The bridge, a, when located between the screw or feeding portion of the shaft, G, and the revolving core, F, of the mold in a clay pipe machine, substantially as and for the purposes specified.

Professor HENRY WURTZ,

Formerly Chemical Examiner in the U. S Patent Office, may be employed professionally as a SCIENTIFIC EXPERT. Geological Examinations and Reports, Analyses and Assays etc. etc., Practical Advice and Investigations in the CHEMICAL ARTS and MANUFACTURES. Invention and Examination of new chemical methods and products. Address 26 Pine street, rooms 35 and 36. Always in at 1 P. M.

☞ WRITTEN COMMUNICATIONS PREFERRED.

IMPORTANT TO GOLD AND SILVER MINERS AND COMPANIES.

PROFESSOR WURTZ,

Who is the inventor and Patentee of the new and wonderful uses of

Sodium in Working Gold and Silver Ores and Jewelers' Sweepings,

Will furnish at the above address information relating thereto; together with experimental packages of

SODIUM AMALGAM

TO PARTIES ENGAGED IN MILLING ORES ONLY.

All preparations and instructions elsewhere obtained are spurious and unreliable.

☞ WRITTEN COMMUNICATIONS PREFERRED. (1-tf

P. J. MOORE. T. L. GAUSSEN, Late Inspector Cin. Gas Co.

MOORE & GAUSSEN,

PLUMBERS,

Gas and Steam Fitters,

221 WEST FIFTH STREET,

Between Elm and Plum,.....CINCINNATI.

Pumps, Hydrants, Water Closets, Water Stands, Wash Basins, Water Rams, Slabs, Bath Tubs, &c. Street Lead and Lead Pipe, Wrought Iron Steam, Gas and Water Pipe of all sizes, Cast Iron Drain Pipe, Bends, Tiles, Branches, &c.

GAS FIXTURES OF ALL KINDS.

Chandeliers, Pendants, Brackets, Drop Light Argand Burners, Portable Gas Stands, Still Flame Shade Globes, Bells, &c.

Repairing Promptly Attended To.

WANTED—A SITUATION BY A PRACTICAL GAS ENGINEER of experience. Can lay Mains and Service Pipes, and do all fittings required for Gas. Has been in his present situation eight years, and can give testimonials as to character and ability. Would not object to go abroad.

WILLIAM HUMPHREYS,
*tf Supd't Gas Works, Waterford, N. Y.

SUMMER STOVES.

The uncomfortable heat in the house, as well as much time and expense and the dust of coal and ranges, may be avoided by the use of the

ETNA, or STAR GAS STOVES,

OR

EDDY OIL STOVES,

WHICH COOK IN THE MOST PERFECT MANNER.

☞ Sold at all House Furnishing Stores.

MOORE & NICHOLS,
1-2t] Manufacturers, 45 Dey street, N. Y.

SCHOOL OF MINES,

COLUMBIA COLLEGE.

EAST 49th STREET, NEW YORK.

FACULTY:

F. A. P. BARNARD, S.T.D., LL.D., President.
T. EGLESTON, JR., E. M., Mineralogy and Metallurgy.
FRANCIS L. VINTON, E. M., Mining Engineering.
C. F. CHANDLER, Ph. D., Analytical and Applied Chemistry.
JOHN TORREY, M.D., LL.D., Botany.
CHARLES A. JOY, Ph D., Genera Chemistry.
WILLIAM G PECK, LL D., Mining Surveying and Mechanics.
JOHN H. VAN AMRINGE, A.M., Mathematics.
OGDEN N. ROOD, A M., Physics.
JOHN S. NEWBERRY, M.D., Geology and Palæontology.

The plan of this School embraces a three years' course for the degree of ENGINEER of MINES, or BACHELOR of PHILOSOPHY.

For admission, candidates for a degree must pass an examination in Arithmetic, Algebra, Geometry and Plain Trigonometry. Persons not candidates for degrees are admitted without examination, and may pursue any or all of the subjects taught. The next session begins October 7, 1867. The examination for admission will be held on October 8. For further information and for catalogues, apply to DR. C. F. CHANDLER,
180-1yr. DEAN OF THE FACULTY.

WORKS ON GAS.

Bowditch—ANALYSIS, PURIFICATION AND USE OF COAL-GAS. 8vo cloth, $6.25.

Clegg ON THE MANUFACTURE OF COAL-GAS. 1 vol cloth, $10.50.

THE GAS WORKS OF LONDON. By Zerah Colburn. 12mo 75 cents.

HOW TO MANAGE GAS. By F. Wilkins. paper 25c.

GAS AND VENTILATION. By E. E. Perkins. 18mo $1.25.

D. VAN NOSTRAND.
Publisher and Importer, 192 Broadway.

☞ Our new Catalogue of SCIENTIFIC BOOKS will be sent free of expense on application.

Gas Engineer's Book of Reference,

Illustrated with numerous engravings, and containing description and prices of all articles required in connection with the system of Gas Illumination, as manufactured and supplied. By GEO. BOWER 4to. paper, $1.00.

GAS FITTER'S GUIDE,

showing the Principles and Practice of Lighting with Coal Gas, with details of Fittings. Paper, 40 cents.

GAS CONSUMER'S GUIDE.

By WILLIAM RICHARDS. 1 Vol., 50 cents.

For sale by

D. VAN NOSTRAND,
76 Publisher and Importer, 192 Broadway.

JOHN P. NESSLE. JAMES A. TAYLOR.

Nessle & Taylor,

MANUFACTURING ENAMELERS

OF

IRON AND OTHER METALS.

97 Water street, Brooklyn. 171tf

J. S. PHILLIPS, C. E. M.,

MINING ENGINEER, Etc.,

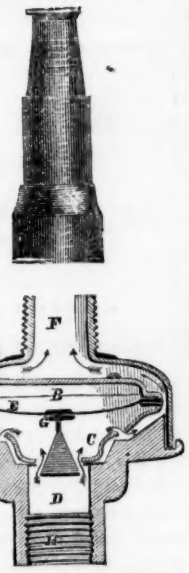
from Cornwall, who came to work Ledges for a New York Company at Humboldt, Nevada, is free for Examination or Superintendence of Mines, in consequence of his immediate condemnation and abandonment of those operations.

REFERENCES:—Messrs. Daniels, Crozier, Coe, & Co., Bankers, etc., 22 Nassau street, New York. Orders by Telegram, Humboldt City, Nevada. n74-3t

NOTICE

To Gas Companies and Gas Consumers.

THOMPSON'S GAS CONTROLLER



The only perfect SELF-ACTING REGULATOR and burner combined ever invented or known to science.

This Automatic Gas Controller works upon a simple and well-known principle n Mechanics. The lower cut fully shows its construction. The conical valve at G is attached to the elastic diaphragm, E. As the gas enters in the direction as shown by the arrows, the diaphragm E is acted upon according to the pressure of the gas, and tends to close the valve upon its seat. The chamber, B, of the inner case communicates with the air by the orifice, (A). Hence the gas below the diaphragm is only balanced by the air above it and the valve falls or rises as the pressure varies, to regulate the admission of the gas, and consequently the pressure at the burner.

This Controller will save from 25 to 60 per cent. of gas according to the pressure in the mains, and gives a beautiful, steady light, at a minimum of cost.

Late improvements have made this Controller simple, durable and an unrivalled gas economizer.

Reference is permitted to the following gentlemen :—

Col. CHAS. ROOME	Pres't Manhattan Gas Co.,	N. Y.
C. H. SAND, Esq,	" Metropolitan Gas Co.,	"
J. H. ADAM Esq.,	" New York Gas Co.,	"
PETER COOPER, Esq.	Cooper Institute,	"
JOHN A. DUFF, Esq.,	Olympic Theater,	"
GEO. H KITCHEN,	Inspector of Gas Meters,	"
A. L. BOGART. Esq.,	Gas Engineer,	"
Col. J. A. SABBATON,	Engineer Man. Gas Co.,	"
Col. A. J. WHITE	" Met. Gas Co.,	"
J. K. SIMPSON,	" Cooper Institute.	"

Persons interested are invited to call at the office, 22 Pine-str't where they can see the operation by pressure guage and test meters.

M. L. CALLENDER, Agent.
22 Pine Street.

THE

WASHINGTON MILL

AND

SILVER MINING COMPANY

OF ECHO DISTRICT, HUMBOLDT CO., NEVADA.

Capital Stock $300,000,

Issued for Mining Purposes.

60,000 Shares at Five Dollars each.

OFFICERS:
- President,—J. Clements Stocker.
- Vice President,— John J. Thomas.
- Secretary and Treasurer,—Henry Lee Reynolds.
- Superintednent,—William S. Sargent.

TRUSTEES:
- J. Clements Stocker, New York city.
- John J. Thomas, New York city.
- Lewis W. Phlips, New York city.
- F. Page Davis, Unionville, Nevada.
- Henry Lee Reynolds, New York city.

Office of the Company, 30 Pine street, New York.

☞ The mine of this company rapidly approaching that point of development which will necessitate the erection of a Mill, the Trustees are authorized to dispose of 10,000 shares of the reserve capital stock.

THE AUBIN BALANCED

VALVE WATER METER,

(Used also for Oils and Liquors)

IS NOW IN USE BY MANY CITY WATER Companies, because of its LOW PRICE, SIMPLICITY, DURABILITY, ACCURACY UNDER ANY PRESSURE, and, (a great advantage,) because it runs with less head than any other meter used.

Manufactured by

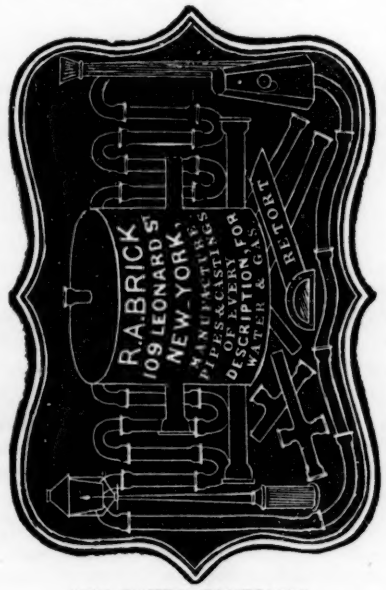
H. Q. HAWLEY,
Albany, N. Y.

CATALOGUE of Scientific, Military, Naval and Miscellaneous BOOKS just published, and sen free on application.

D. VAN NOSTRAND,
PUBLISHER,
163 192 Broadway, New York.

DRIVING PIPE,

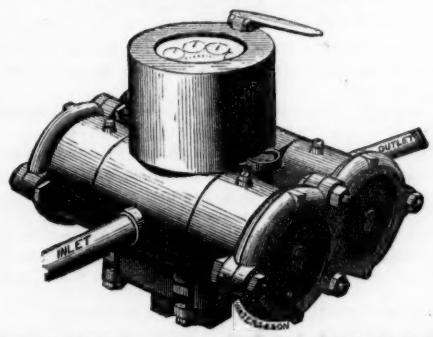
BERGEN IRON WORKS,



OFFICE 109 LEONARD STREET, NEW YORK.

AND BANDS COMPLETE.

H. R. WORTHINGTON'S



PATENT WATER-METER.

This Meter is also used for the measurement of Oil —it combines

ACCURACY, SIMPLICITY, and REMARKABLE DURABILITY with such ease and certainty of motion, as to offer no appreciable obstructions to the flow of water in the pipes to which it is connected, as it runs and registers upon three inches head, or when delivering the smallest stream. These qualities, with its low cost, have caused its extensive adoption by corporations and individuals, in many of our largest cities.

HENRY R. WORTHINGTON,
61 Beekman steet, N. Y.

METROPOLITAN

GAS STOVE MANUFACTURING COMPANY.

Salesroom, 702 Broadway,

Above Fourth Street, New York.

PATENT GAS HEATING AND COOKING STOVES, RANGES, &c.

~~SCIENTIFIC GAS HEATING APPLIANCES,~~

For every known trade or profession.

PATENT PETROLEUM OR AEROVAPOR STOVES. PATENT KEROSENE OIL STOVES. PATENT PORTABLE VAPOR BATH APPARATUS.

Gas Stoves made by us are constructed under the immediate supervision of A. L. BOGART, Esq., Analytical Chemist and Gas Engineer. They contain recent improvements of a scientific character—by means of which a PERFECT COMBUSTION is obtained, and the Calorie produced, rendered CHEMICALLY PURE. Too much cannot be said against the use of Gas Stoves for heating apartments—when the products of combustion (Carbonic and Sulphurous Acids are emitted without purification into the atmosphere. Your Physicians will inform you, that this is a subject of vital importance) and worthy of your closest scrutiny—before purchasing. The public are invited to examine into the merits of these inventions.

Every article WARRANTED as represented.

Worthington's Steam Pump,

Extensively used by

GAS-LIGHT COMPANIES,

For sale at greatly reduced prices. Also, a new and highly successful Pump, driven by water pressure, requiring no attention or repairs, and the most economical water motor yet constructed.

☞ Patent GATES for Water and Steam-stops. ☜

HENRY R. WORTHINGTON,
61 61 Beekman-st, New York.

THOMAS CASSIDY,

Iron Founder & Pattern Maker

Corner Hudson and Park Avenues,

BROOKLYN.

Iron Store Fronts put up at short notice.

Square and Round Columns, Truss Girders, Vault Beams, Window Lintels, Sills, &c.

A large assortment of Railing Castings constantly on hand, or made to order, at the shortest notice.

Lamp Posts—Brooklyn Pattern.

☞ A large stock of the usual sizes of Round Columns kept on hand.

J. H. TIEMANN.

ANALYTICAL CHEMIST,

Metallurgist & Mining Engineer.

☞ GOLD AND SILVER BOUGHT.

240 PEARL ST. Cor. BURLING SLIP, N. Y.

tf

Edw'd Van Orden & Co.,

Manufacturers of Fire and Water-proof

Plastic Slate Roofing Materials,

ROOFING TOOLS, &C.

Office 41 Liberty-st.

Edw'd Van Orden.
Jas. E. Dunn. NEW YORK.

MILLS CONVENIENT FOR SHIPPING.

CHAS. HOWDON SMITH,

BROKER IN MINING STOCKS

AND OTHER SECURITIES,

No. 5 1-2 PINE STREET,

ROOM NO. 5, NEW YORK.

T. CASSIDY & CO.,

(SUCCESSORS TO P. CASSIDY,)

Dealers in Old and New

IRON, COPPER, BRASS,

LEAD, SPELTER, &c.

Corner of Bridge and John Streets,

BROOKLYN.

☞ N. B.—The highest cash price paid for the above named articles.

T. CASSIDY. 57-80 J. PEARCE.

J. W. WHEELOCK,

DEALER IN

GASOLEINE.

SUITABLE FOR GAS MACHINES, ALSO FOR CARBURETTING OF GAS, &c.

70-94 **204 Pearl St., New York.**

JOSEPH NASON & CO.,

No. 61 Beekman street, corner of Gold,

NEW YORK.

Manufacturers of WROUGHT IRON PIPES and Fittings for Steam, Gas and Water, Boiler Flues, Steam Boilers, Coils, Heaters, Evaporators, Pumps, Ventilating Machinery, and Apparatus for Warming Buildings by Steam and Hot Water.

OIL TUBING, CAST IRON DRIVING PIPE, Boring Tools, Oil Pumps, Sand Pumps, Stuffing Boxes, Tongs, Clamps, Swivels, Joints, &c. 131

BRAYTON'S

Patent Steam Generator,

AND ENGINE.

A PERFECT SUCCESS. BY THIS INVENTION, the long sought-for object has been accomplished; to wit: A means by which steam can be generated safely, so that there shall be no more danger from explosion than with the hot-air engine, and at the same time retain all the power of the steam engine. This much sought for result has at last been accomplished, and after many severe tests we feel fully warranted in offering this Steam Generator and Engine to the public as a perfectly safe power, and at the same time a cheap power As a generator of steam for heating buildings, etc, there is not its equal in use. For further information or circular, address

R. A. HUTCHINSON,
159-182 Agent, No. 8 Dey-street, New York.

Mining & Petroleum Standard

AND

AMERICAN GAS-LIGHT JOURNAL,

Published on the 2d and 16th of Each Month

At No. 22 Pine Street, New York.

BRYANT, CALLENDER & CO.,

EDITORS AND PROPRIETORS.

TUESDAY, JULY 16, 1867.

WISHING TO MAKE this Journal an organ of intelligent discussion to those of our readers who may wish to gain or give information on the subjects to which its columns are devoted, the publishers solicit letters from all among them who make the study of those subjects a pleasure, or a profession.

SUBSCRIBERS would confer a favor upon us by remitting CHECK or POST OFFICE MONEY ORDERS, as we are frequent losers where money is enclosed in letters.

☞ NEWS AGENCY.—The American News Company, 119 and 121 Nassau street, New York, are agents for this Journal. Newsdealers will please send orders to them.

CONTENTS OF NO. 2.

Miner's Patent Street Lamps Illus.	17	Miscellaneous Items	20
Conduction of Sound by Hydrogen and Air	17	Peat Among the Gas and Petroleum Springs	21
Eddy's Improved Oil Stoves, Illus.	17	Carbonic Oxide	21
The Water Supply of Our Great Cities	18	Gold Mines in Brazil	21
Smelt Your Own Copper Ores	18	Recent Inventions	21
Expose of Running Peat Works	18	Mining Share Market	22
On the Analysis of Coal-Gas	19	Patent Claims	22
Useful Receipes	19	Answers to Correspondents	24
New Methods for the Preparation of Oxygen	20	EDITORIALS—	
Water Supply for Valparaiso	10	The Economy of Combustion	24
Wilde's Electric Light	20	Tanning Leather in Vacuum	25
Destruction of Gas-Pipes by Rats	20	Lime in Water Purification	32
		Peat Fuel for Domestic Purposes	32
		Brevities	32

NOTICE.

☞ Parties having back volumes of this Journal from No. 1 to 7 inclusive, to spare, will please communicate with us, stating the price.

Answers To Correspondents.

☞ Correspondents will please write on one side of the sheet only.

A. T., Cal.—Silver ores require different treatment for the several varieties of ores. Silver occurs native and alloyed; also mineralized with sulphur, selenium, arsenic, chlorine, bromine, or iodine, and in combination with different acids. In expressing the purity of silver, if absolutely pure, it is said to be silver of twelve pennyweights; if 1-12th of its weight is alloy it is called silver of 11 pennyweights, etc.

L. B., of Mo.—The gas made in Narboune, France, is entirely different from ordinary coal gas or carburetted hydrogen. The French method consisted in using hydrogen gas to heat platinum wire to a white heat, and the wire gave the light.

W. N. T., of N. Y.—Good shellac varnish may be made by using about two pounds of shellac to the gallon of alcohol, or in that proportion.

MINER, of Pa.—Dana's you will find to be the best works on mineralogy and geology.

S. L., Mass.—The Lenoir Gas Engine is quite similar to the steam engine in principle; but it uses an explosive mixture of air and gas, instead of steam, to move the piston.

The Ruhmkorff apparatus is an apparatus to produce a large amount of inductive electricity. A current of electricity passes through a coil of large wire, which induces a current of intensity in an outer coil of fine wire of great length.

—The business of Pittsburg, Pa., is said to represent about $114,000,000.

THE ECONOMY OF COMBUSTION.

Few persons realize the want of economy that is exhibited every day in the combustion of wood, peat and coal, and all solid fuel, as used in our domestic establishments for warming our apartments and cooking our food, etc. More especially, however, a scientific observer will notice the great loss that is constantly going on where coals are more laagely consumed in the various branches of the arts and manufactures, and our steam marine and inland carrying commerce. This loss is owing to the imperfect combustion of the fuel, and a non-conformity to the laws that govern radiation and absorption of heat.

The phenomena of combustion is a chemical operation and its results may be estimated with accuracy. It is a simple change of the components of the fuel, or a resolving of a solid into its gaseous elements, which take up a new combination. If it is a pure carbon that undergoes combustion the change is simple and complete, and we have, as the result, carbon combined with the oxygen of the atmosphere, producing carbonic acid gas, the highest state of oxydation, and producing the greatest amount of heat. If the combustion is imperfect we obtain carbonic oxyd as the result, because the chemical change has been but half completed. The carbon gas has passed off into the atmosphere, combined with half the oxygen it has an affinity for, and the evolution of caloric or heat has been only in the same proportion.

Thousands of our furnaces throughout the land are so imperfectly constructed that the supply of oxygen is never half that is necessary for perfect combustion; often the draft is too little at one point and too powerful at another. In such cases the volume of air—oxygen diluted with nitrogen which it is—only serves to absorb the heat already evolved and sweep along, carrying off into the atmosphere the imperfectly consumed gases and even the particles of solid unconsumed carbon, as evinced by the volumes of smoke apparent in our manufacturing cities and towns; but more especially where rich carbonaceous or bituminous coals are used, as in our western towns.

The traveller visiting Pittsburg for the first time will, if of a reflective mind, fully realize the absurdity and folly of burning coals in a manner so as to utilize the least possible amount of heat, thereby, figuratively and in fact, throwing to the winds hundreds of thousands of dollars, while the unconsumed gases and carbon fill all the air with disagreeable and noxious odors deleterious to health; where the heavens are eternally darkened with a pall-cloud of smoke, and the sunlight seldom penetrates, except to give the ghostly coloring to all objects observed when looking through a smoked glass at an eclipse; where goggles are the fashionable eye glasses to avoid the flying ashes and cinders; where white paint is unknown, clean linen an impossibility, and personal comfort a myth. Cincinnati and St. Louis will ere long labor under the same disadvantages, though not so apparent now, and so will all manufacturing towns where soft coal are used, until invention comes to the relief of suffering humanity to produce, and until a law is made making it imperative to use some efficient smoke-consuming device.

THE SUPPLY OF AIR.

Improvements in the manner air is introduced to supply the combustion of coal in grates, stoves, ranges, heaters, etc., are numerous, and much progress has been made in them both in this country and in Europe during the last five or ten years. So also, there has been material improvements in glass, smelting and iron furnaces, etc., and especially in land and marine boilers.

The introduction of the air into land boilers in numerous jets, or divided portions, was first practically adopted in 1841, in numerous furnaces in Manchester, England, and at the water-works at Liverpool, and at the stationary engine of the Liverpool and Manchester Railway.

It is stated that although some of these furnaces were provided with high shafts from one hundred to one hundred and fifty feet high, they were regarded as an intolerable nuisance; since the change in the admission of the draft, however, there is no inconvenience from smoke and odor, and the former troubles are quite forgotten.

It is immaterial in what part of the flue or furnace the divided jets or currents are introduced, provided the main condition be attended to—that is, to have the mechanical mixture of air and gas continually performed before the temperature of the carbon of the gas, these in a state of flame, be reduced below that of ignition. This temperature should not be under 800° Fahrenheit, since, below that, flame cannot be produced or sustained. It is on this principle that the Miners' Safety Lamp is constructed, as originally invented by Sir Humphrey Davy.

Six pounds of carbon requires sixteen pounds of oxygen—now the volume of atmospheric air which contains sixteen pounds of oxygen is estimated at about 900 cubic feet at ordinary temperatures. Taking, then, bituminous coal as containing sixty per cent. of carbon, we have 1600 pounds of coke (the product of 20 hundred weight of coals) requiring its equivalent of oxygen, and which will be equal to 240.000 cubic feet of air; since as 6 : 900 :: 16 : 240,000. This great quantity of air is required for the consumption of the coke on the bars, producing a highly heated, transparent carbonic oxide gas.

It is well known that each cubic foot of gas requires absolutely the oxygen of ten cubic feet of atmospheric air. By the proceeds of the gas companies we learn that from 8,000 to 10,000 cubic feet are produced from each ton of bituminous coal, which necessarily requires no less than from 80,000 to 100,000 cubic feet of air. Adding to this 240,000 cubic feet required for the coke, we have a gross volume of 340,000 cubic feet as the minimum quantity absolutely required for the combustion of each ton of coal, independently of the excess which will always be found to pass beyond what is chemically required.

It is quite certain, that to effect the perfect combustion of all the combustible gases produced in a furnace, a large amount of air, distinct from the air that enters the grate, is required. That correct proportions of air, at the grate and beyond it, are necessary to a perfect combustion of the coal and the gases evolved. In the process of combustion of coals in all furnaces, a stream of either light carburetted hydrogen or carbonic oxide gas is at all times generated, and there is consequently a corresponding demand of air. If the air is shut off the gases are unconsumed, and smoke is produced, and the heat diminished in proportion.

PRACTICAL TEST REPORT.

In the report made to the Dublin Steam Packet Company, in 1842, by Sir Robert Kane, one of the highest chemical authorities of the day, after an elaborate investigation of a practical and theoretical nature, the results obtained were

1st. That, in the combustion of coals, a large quantity of gaseous and inflammable material is given out, which, in furnaces of ordinary construction, is, in a great measure, lost for heating purposes, and gives rise to the great body of smoke which, in manufacturing towns, produces much inconvenience.

2d. That the proportion which the *gaseous* and volatile portion of the fuel bears to that which is *fixed*, and capable of complete combustion on a com-

mon furnace grate, may be considered one-fourth, in the case of ordinary coal.

3d. That the air for the combustion of this gaseous combustible material cannot, with advantage, be introduced either through the interstices of the fire bars, or the door by opening it. In the former case, the air is deprived of its oxygen by passing through the solid fuel, and then only helps to carry off the combustible gases before they can be burned, and, in the latter case, the air which would enter, by reason of its proportionate mass, would produce a cooling influence, and connot conveniently be mixed so as properly to support the combustion of the gases.

4th. The combustion of the gaseous materials of the fuel is best accomplished by introducing, through a number of thin or small orifices, the necessary amount of air, so that it may enter in *a divided form* and *rapidly* mix with the heated gases in such proportions as to effect their complete combustion

5th. That, in burning *coke,* or when coal has been burned down to a *clear red fire,* although the combustion on the grate may appear to be perfect, and little or no flame may be produced, and no smoke whatever made, *there may be a great amount of useful heat lost,* owing to the formation of *carbonic oxide,* which, not finding a fresh supply of air at a proper place, necessarily passes off unobserved.

6th. That under the common arrangements of boiler furnaces, where there is intense combustion on the *fire-grate,* and but little in the *flues* the difference of temperature in and around the various parts of the boiler are greater; and, consequently, the boiler is most subject to the results of unequal temperatures. On the other hand, when the process of combustion is spread through the flues, as well as over the fire-grate, the temperature remains most uniform throughout, and the boiler and its settings must be least liable to injury.

7th. That the heat produced by the combustion of the inflammable gases and vapors from the fuel, in flues or chambers behind the bridge, must be considerable, and can be advantageously applied to boilers, the length of which may be commensurate with that of the heated flues.

TANNING LEATHER IN VACUUM.

The art of tanning leather has been much improved since the time when seven years was considered the shortest period a side of sole leather could be made fit for the bootmaker.

A company called the "St. Louis Eureka Tanning Company" has lately been organized in St. Louis to carry out the principles of a new and important improvement in tanning, which bids fair to revolutionize the art as now practiced. The process was patented by Messrs. Brewer & Wirmer, of Illinois, in 1866.

The apparatus consists of a cylindrical horizontal receiver of heavy boiler iron, 3-8 inch thick, 12 feet long and 9 feet diameter, and heavily stayed at the heads, which are of cast iron. One head is provided with a solid cast iron door which can be closed hermetrically, and of a size to admit a man freely.

The preliminary process is the same as usual for liming, bating, etc. The hides are then placed in the receiver, from which the air is then exhausted by an air pump, and the tanning liquor permitted to rush in by opening stop-cocks to pipes connected with the liquor vats. The tanning material is the same as is used in all tanneries, and is used *cold.*

The hides are hung in the receiver, so that all portions of them are subject alike to the action of the tanning liquor. The time required for perfectly tanning by this process is from six to twenty-four hours, according to the weight and character of the hides.

This process is held to be superior to the old process, owing to the fact that the removal of the air and gasses in the hides is effected mechanically, so the liquor enters the exhausted pores instantaneously; while the old process requires a chemical effect, or partial decomposition to take place, before the pores are fully opened to give access to the tanning liquor, which must necessarily injure the body and strength of the leather.

The receiver machinery and apparatus in operation was made by G. B. Allen & Co., of the Fulton Iron Works, and are creditable to the builders for their strength and completeness

Col. Charles Doty, Secretary of the Company, is the projector of the new features in the apparatus, which consist chiefly in placing the receiver in a horizontal position, and entering it by a small door provided with rubber packing. This gives the workmen free and easy access to the receiver, for the purpose of introducing and adjusting the hides. We are satisfied this invention will prove immensely valuable to the projectors, when once introduced to the public.

THE MINING & PETROLEUM STANDARD AND AMERICAN GAS-LIGHT JOURNAL, is published at No. 22 Pine Street, opposite the Sub-Treasury Building on the 2d and 16th of every month, and is a recognized official organ of—

LIGHT, HEAT, MINING INTERESTS.
PETROLEUM, WATER-SUPPLY, AND
SCIENTIFIC SUBJECTS GENERALLY.

TERMS.

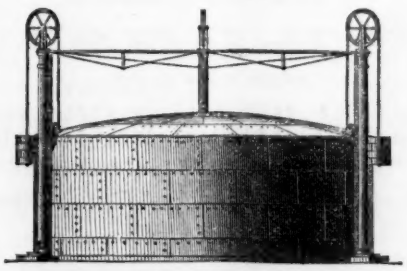
SUBSCRIPTION—Three dollars per annum in advance.
ADVERTISEMENTS.—One dollar per inch in column for each insertion. Large space or long time by special contract.—Payable in advance.
☞ No Advertisement less than $2 00.

AGENTS

NEW YORK—AMERICAN NEWS COMPANY, 119 and 121 Nassau street.
BOSTON—S. M. PETTENGILL & Co., No. 6 State Street.
PHILADELPHIA—JOY, COE & Co., No. 441 Chestnut st. cor. 5th.
Germany.... ...B. WESTERMAN & Co., of New York.
Great Britain....TRUBNER & Co., 60 Paternoster Row, London.
France. .....} LE JOURNAL DE L'ECLAIRAGE AU GAZ, 25 Boulevard Poissonnière.
Brussels, Belgium—HENRI BERGE.

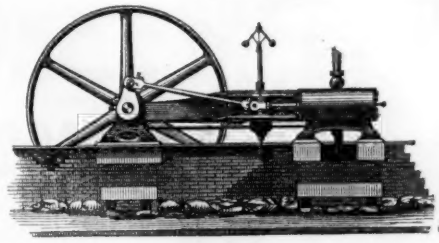
☞ All communications to be addressed to "The Editors," No 22 Pine Street, New York.

ERIE BASIN IRON WORKS,
MANUFACTURERS OF



GASOMETERS
OF ALL SIZES INCLUDING
FRAMES, GIRDERS, STANDING PIPES, WALL PLATES, GAS MAINS, RETORTS, ETC. ETC.
ALSO
STANLEY'S
Patent Hydraulic Gas Main.
Our superior facilities for doing this class of work encourages us to solicit Gas Companies and others to give us their orders.
We have excellent arrangements for shipping directly from the works, the depth of water being ample.
Office and Works on
Dwight, Elizabeth and Van Dyke streets,
SOUTH BROOKLYN, N. Y. 1

ERIE BASIN IRON WORKS,
MANUFACTURERS OF



Babcock & Wilcox Patent Variable Cut-off
STATIONARY STEAM ENGINES,
These Engines are conceded to be superior to all others in ECONOMY OF FUEL and REGULARITY OF MOTION and in NON-LIABILITY TO DERANGEMENT; will save from 25 to 50 per cent. over any Engine in this market.
Flue and Tubular Steam Boilers, Tanks, Oil Stills, Mill Work, Machinery, etc., etc.
OFFICE AT THE WORKS ON
Elizabeth, Dwight and Van Dyke Sts.,
SOUTH BROOKLYN
☞ Repairs done on Steamers at short notice.

LACLEDE FIRE BRICK WORKS,
S. HAMBLETON & JAS. GREEN,
PROPRIETORS,
Cheltenham. Mo.
Office, No. 1007, North Levee,.....St. Louis,

HAMBLETON & GREEN,
MANUFACTURERS OF
Fire Bricks, Tiles, Gas Retorts, Sewer Pipes, &c., &c.
Have on hand a good assortment of articles in their line, of a very superior quality, manufactured by them from the celebrated Fire Clay of Cheltenham, and for sale at reasonable prices and in quantities to suit,
AMONG WHICH ARE
BOILER TILES, Centre and Side of all sizes.
BRIDGE TILES, 6x12, 12x12, 12x18 and 12x24 inches.
CIRCULAR BACK TILES, all sizes.
FIRE BRICKS, Square, Arch, Split, Soap, Pressed, Jamb, Wedge, Key, Bull Heads Cut, &c., &c.
BLAST FURNACE LININGS, Bosh Brick and Timp Tile.
CHIMNEY TOPS, Fancy and Plain.
SEWER PIPES, all sizes.
GAS AND BONE RETORTS,
GROUND FIRE CLAY, &c.
Orders left at the office, No. 1007 Levee, between Washington and Carr streets, will receive prompt attention, and goods delivered without delay.
Purchasers can depend upon all articles purchased from us being equal, if not superior, to any other made in the country. (1-1y

WANTED—A SITUATION BY A RELIABLE and Experienced Workman of nearly 30 years' service in every branch of Gas and Steam Fitting, and the erection of every kind of Gas Works generally. He can superintend the working departments appertaining to Gas-Light Companies, having a thorough knowledge practically. No objections to any State in or out of the Union. Letters addressed to me at the Post-office, Augusta, Ga., will receive immediate attention. WM. J. CONLEY,
80-tf care of C. A. ROBBE, Plumber and Gas Fitter.

WANTED—Second-hand Purifiers about eight feet square—must be in good condition. State particulars and price, and address the GAS LIGHT JOURNAL, No. 22 Pine street.

F. H. LOVELL & CO.,

Successors to Alfred Bliss & Co.

MANUFACTURER AND JOBBERS OF

KEROSENE

LAMPS

CHANDELIERS,

BRACKETS,

AND

Lamp Trimmings

GENERALLY.

Station, Sugar House, Street and Coal Oil Lanterns.

No. 233 Pearl Street,

159-182 *NEW YORK.*

Illustrated catalogues and price lists furnished on application.

NEW YORK LAMP COMPANY,

259 Pearl Street, New York.

We Would call especial attention to our recently improved

UNION BURNER,

which now burns without SMOKE OR ODOR. With Coal or Petroleum Oil makes the cheapest light known,

One Cent for Eight Hours.

The improved Union Burner without chimney, for a hand or portable night lamp is unrivalled.

Patented in the United States, England, France and Belgium.

NEW YORK LAMP CO.,

58 259 Pearl-street, near Fulton, New York.

BIRD, PERKINS & JOB,

IMPORTERS OF

COAL FOR GAS, STEAM AND IRON

MANUFACTURES.

Agents for the sale of the **Westmoreland** Coal Company's celebrated

GAS COAL,

and the Consolidation Coal Company's "Ocean Mine"

CUMBERLAND COAL.

Particular attention given to the charter of vessels at the lowest freights.

39 INDIA WHARF, Boston. 104 WALL STREET, N. Y. 134

JAMES HOY. JNO. P. KENNEDY. WM. E. HOY.

HOY, KENNEDY & CO.,

Engineers and Contractors

FOR THE ERECTION OF

GAS WORKS,

Extensions, and Improvements, are prepared to supply

GAS-LIGHT COMPANIES

With all the materials used by them. [77-t

No. 111 Liberty street. New York.

NEW SYSTEM OF

VENTILATION.

—BY—

HENRY A. GOUGE.

☞ Pamphlets on free. Address Henry A. Gouge, 254 Broadway, New York. 173

FOR SALE.

A COMPLETE SET OF APPARATUS FOR MANUFACTURING fifty thousand feet of Gas per day, consisting of Hydraulic Main, Bridge and Stand Pipes, Mouth Pieces, Condenser, Washer, Four Purifying Boxes and Station Meter.

For particulars apply to C. J. WESTERVELT, President, or to JOHN DREW, Superintendent, Paterson, New Jersey. 76-78

R. L. DELISSER & CO.,

DEALERS IN MINERAL LANDS

—AND—

PATENT RIGHTS,

No. 69 Beaver St., NEW YORK.

152-176

WILLIAM ELTING

Manufacturers Agents for the Sale of

PORTABLE AND

Stationary Steam Engines,

BOILERS AND MACHINERY,

No. 65 Liberty-St, NEW YORK.

☞ Leather and Rubber Belting supplied at usual rates. Circulars sent on application. 55-78

MOREY & SPERRY,

Manufacturers of

HEPBURN & PETERSONS, AND BEATH'S

Amalgamators, Stamp Mills,

Quartz Crushers, and other

MINING MACHINERY.

ALSO AGENTS FOR

Foundries in San Francisco, Cal., and are prepared to make time contracts to erect Mills completed, on the premises in California, Nevada and other Territories.

Office No. 95 LIBERTY ST., Rooms 10 & 11.

152-176 **New York.**

A. HITCHCOCK,

Inventor and Manufacturer of the

Cam Quartz Breaker and Pulverizer,

REVERSIBLE ROLLER MILL,

IDAHO MILLS & AMALGAMATORS,

Adapted to All Kinds of Power.

Unequalled for utilizing power—avoiding friction and wear,—rapidity of work, and facility of transportation and adjustment.

Also, **Hitchcock's Adjustable Tubular Flue-cleaning Boiler,** and other valuable Patents, for which license to manufacture will be granted on reasonable terms.

Circulars furnished on application.

53-76 *Office No. 4 & 6 Pine Street, New York.*

GEO. H. BRONSON,

132 Malden Lane, New York,

Dealer in

Paraffine Machinery Oil,

From PURE CANNEL COAL, adapted to all classes of

Stationary Machinery, Locomotive Engines, Railroad Cars, Woolen Factories, Cotton Spindles, Sewing Machines, &c.

Paraffine Wax and Paraffine Wax Candles. Also the best brands of Burning Oils. All Oils guaranteed to answer the purpose for which they are recommended. 57 80

O. B. GRAY,

DEALER IN ALL KINDS OF

INDIA RUBBER GOODS

Vulcanized Machine Belting,

Conducting, Hydrant, and Engine Hose,

GUM STEAM PACKING,

Amidon's Improved Clothes Wringer,

And all kinds of Useful and Fancy Rubber and Vulcanite Goods,

No. 201 Broadway,

Middle of the Block between Fulton and Dey Streets, NEW YORK.

WILLIAM S. CARR & CO.,

Succesor to Sawyer & Co.,

SOLE MANUFACTURERS OF

Carr's Patent Water Closets,

URINAL VALVES, &c.

Also Manufacturers and Dealers in PLUMBING MATERIALS OF EVERY DESCRIPTION, Plumbers' Brass Works, Earthen Ware, Pumps, Iron Drain Pipes, Traps and Sinks, Copper Bath Tubs, Showers, &c., &c.

OFFICE AND MANUFACTORY

149, 151, 153, 155, 157 Centre Street, cor. Canal,

NEW YORK.

Illustrated Catalogue and Price List sent on application.

152-176

CHARLES H. REICHMANN,

Manufacturer and Jobber of

LAMPS,

Petroleum Stoves, &c.

AND IMPORTER OF

Porcelain Shades,

WICKS, &C.,

No. 45 Fulton St.,

[Bet. Pearl and Cliff]

NEW YORK.

ALL ORDERS promptly filled for his Patent Petroleum Stoves or Lamp Heaters, which are acknowledged to be superior to any other article of the kind now in use, as regards economy in consumption of oil, as well as simplicity of construction.

These Cooking Apparatus are used like any coal oil lamp, being provided with a sheet metal chimney, in consequence of which they burn without odor or smoke. They radiate no heat into the room, and are therefore very desirable in hot weather.

Also, Nursery and Night Lamps combined, a superior and cheap article for nursery or sick room; has a kettle, cup and pan, complete.

PERCE'S MAGNETIC GLOBES,

AND

PERCE'S MAGNETIC OBJECTS.

A beautiful Terrestial Globe, elegantly mounted and colored, and supplied with

MAGNETIC MEN,
MAGNETIC LADIES,
MAGNETIC SHIPS,
MAGNETIC STEAMERS,
MAGNETIC FLAGS,
MAGNETIC LIONS,
MAGNETIC BEARS,
MAGNETIC ELEPHANTS,
MAGNETIC LIGHTHOUSES,
etc., etc., forming a
MINIATURE MAGNETIC WORLD.

PERCE'S MAGNETIC GLOBE has won the warmest ecomiums from the press; from men of science, and from all lovers of the beautiful and useful in science, in art, wherever it has been seen. As an article of HOUSEHOLD FURNITURE, it is elegant and useful; "as useful," says the New York *Independent*, "for the entertainment and instruction of the little ones at home as the piano, or any other instrument for domestic amusement and instruction."

"PERCE'S MAGNETIC GLOBES AND MAGNETIC OBJECTS afford a wide field for many pleasing and surprising experiments; and with it, aided by the explanations which accompany it, our young readers will be able to conjure up many interesting illustrations and games which they will find profitable and amusing."

STYLES AND PRICES.

Perce's Magnetic Globe, 5 in. dia., Plain Stand,	$ 5
Perce's Magnetic Globe, 5 in. dia., Brass Meridian,	7
Perce's Magnetic Globe, 7 in. dia., Plain Stand,	10
Perce's Magnetic Globe, 7 in. dia., Brass Meridian,	25
Perce's Magnetic Globe, 12 in. dia., Plain Stand,	20
Perce's Magnetic Globe, 12 in. dia., Brass Meridian,	25

The Globes of all the above sizes and styles are finished in the highest style of the art, are mounted on polished black walnut stands, and will form an elegant and attractive ornament for the parlor, library or drawing-room.

One dozen of Perce's Magnetic Objects, with plainly written directions, accompany each globe without additional cost.

All Globes and Objects are packed neatly in boxes, and will be sent safely any distance by express, freight paid, on receipt of price.

CHARLES SCRIBNER & CO., Publishers,

151 No. 124 Grand-st., New-York.

EMPIRE LINE

FOR SAVANNAH, GEORGIA,

Every Saturday, the elegant Side-Wheel Steamships

SAN SALVADOR,

Commander, Joshua Atkins, and

SAN JACINTO,

Commander, Winslow Loveland.

Every SATURDAY, from pier 13 North River.

Have been placed on the route to Savannah by the Atlantic Mail Steamship Company of New York, and are intended to be run by them in a manner to meet the first class requirements of the trade.

The cabin accommodations of these ships are not excelled by any Steamers on the coast, and although their carrying capacity is large, their draught of water enables them to insure a passage without detention in the river

San Jacinto,	Saturday,	Oct. 6	San Jacinto	Saturday,	Nov. 3
San Salvador,	..	" 13	San Salvador	..	" 10
San Jacinto,	..	" 20	San Jacinto	..	" 17
San Salvador,		" 27	San Salvador,	..	" 24

Returning, leave Savannah every Saturday at 3 o'clock, P. M.

Bills of Lading furnished and signed on the Pier.

For further particulars, engagement of Freight or passage, apply to

GARRISON & ALLEN, Agents,

No. 5 Bowling Green.

Agent at Savannah, B. H. HARDEE.

MANHATTAN

Fire Brick & Enamelled Clay Retort Works,

MAURER & WEBER,

(Of the late firm of B. Kreischer & Co.)
PROPRIETORS.

Office & Works in 15th street, Avenue C,

MANUFACTURERS OF

Fire Brick and Tiles,

OF ALL SHAPES & SIZES,

Fire Mortar, Clay and Sand.

☞Articles of every description made to order, at short notice. (135

HY. MAURER. ADAM WEBER.

NEW YORK

Fire Brick and Clay Retort Works

☞*Established in* 1845,☜

(Branch Works at Kreischerville, Staten Island,)

B. KREISHER,

Office 56 Goerck St, cor. Delancey, New York.
GAS RETORTS, TILES and FIRE-BRICK of all shapes and sizes.
FIRE MORTAR, CLAY, and SAND.
Articles of every description made to order at the shortest notice.
B. KREISCHER.

J. K. BRICK & Co,

BROOKLYN CLAY RETORT,

—AND—

FIRE BRICK WORKS,

VANDYKE STREET, BROOKLYN, N. Y.

JOSEPH K. BRICK, EDWARD D. WHITE.

J. H. GAUTIER & CO.,

MANUFACTURERS OF

Gas Retorts, Tiles and Fire Bricks,

Black Lead Crucibles, and Carburet of Iron Stove Polish,

JERSEY CITY, N. J.

Refer to—Manhattan Gas Light Co., New York. [135

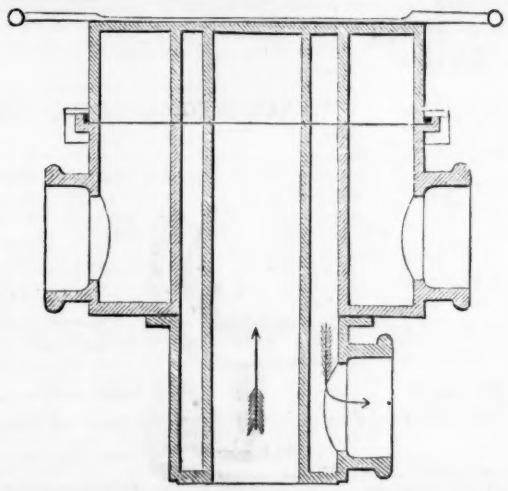
Philadelphia Fire Brick Works,

Corner of Vine and Twenty Third sts., Philadelphia,

JOHN NEWKUMET,

Manufacturer of all kinds of FIRE-BRICK, GAS-HOUSE TILES, to suit all the different plans in use. Clay Retorts and Dentists Muffles. Orders filled at short notice.

PATENT DRY CENTRE VALVE.



The **American Meter Company** invite the attention of Gas Engineers and Gas Light Companies to the PATENT DRY CENTRE VALVE, which is very superior to the HYDRAULIC CENTRE VALVE, and much more durable, besides being less expensive, and not likely to leak or get out of order. It has been successfully introduced at the following Gas Works, where reference may be had of its satisfactory performance:

Detroit, Mich.....	16 inch.	Louisville, Ky.....	6 inch.
Philadelphia, Pa.....	12 "	Covington, Ky.....	6 "
Patterson, N. J.....	12 "	Zanesville, Ohio.....	6 "
Pittsburg, Pa.....	10 "	Indianapolis, Ind.....	6 "
Cleveland, Ohio.....	8 "	St. Joseph, Mo.....	4 "
Bloomington, Ill.....	8 "	Maysville, Ky.....	4 "
Meadville, Pa.....	6 "	Troy, Ohio.....	4 "

Having the Patterns complete for each size, from four inches to sixteen inche we are prepared to furnish them at short notice.

AMERICAN METER COMPANY,
512 West 22d Street, New York.
22d and Arch Street, Phil'a.
23 West Street, Boston.

73-tf

PRINCE'S METALLIC PAINT.

AN INDESTRUCTIBLE COATING FOR

IRON, TIN, and WOOD.

It consists of seventy-two parts Oxide of Iron, and twenty-eight parts Cement Lime Stone in the one hundred pounds.

It has much more body than red or white lead. It is warranted perfectly water and fire-proof and to withstand a greater heat on metals, without scaling, than any other paint in use.

It is a perfect cover for all kinds of iron, tin, or wood-work, out-houses, and canvas coverings. It prevents and arrests the corrosion of metals, and is not affected by the action of salt, gases, acids or ammonia.

It hardens under water, as has been fully demonstrated by its application to gas-holders, by many of the largest gas companies in the United States; which companies having thoroughly tested its properties as herein claimed, pronounce in its favor over any other paints in the market, even though said at double its price.

As a coating for patterns of iron or wood, when mixed with shellac, it is much superior to beeswax, oil, or shellac alone, as has been proven at the large founderies in the country.

For patching boilers and making joints, it is considered superior to red lead, or any other preparation.

For cleaning metals it takes the place of crocus, ouge, and emery, being better and cheaper.

This Paint requires no more oil than dry lead or zinc, and much less than the ordinary mineral paints. It is free from any waste, and possesses a spreading and covering power unequaled.

Terms, by the Barrel or Half Barrel, Five Cents per Pound.

A liberal discount made to parties purchasing by the ton.

A Barrel or Ton will be forwarded to any gas companies desirous of testing its qualities, for which there will be no charge if it does not give entire satisfaction as being the cheapest and most durable of all other Paints in the market.

Also, Prince's Imperial Black Paint, and Prince's Protoxide of Iron.

DANIEL SLOAN & CO., General Agents
115 LIBERTY STREET, NEW YORK.

Local Agent—CALVIN GAY, 29 Federal st., Boston.

WATER AND SEWERAGE PIPES,

KNIGHT-BAILEY PATENTS.

The Water Pipes are made of Wrought Iron, lined with Hydraulic Cement, with Socket Joints, and connections for service pipes already inserted. Entirely free from oxidation, they are absolutely indestructible. They can be laid and guaranteed for much less than Cast Iron Pipes.

The Sewerage Pipes are made of Hydraulic Cement. They stand the most severe tests of acids, increase with age, are perfect in interior finish, and cheaper than any other pipes made.

☞ We will contract for the water supply and drainage of cities and villages.

AMERICAN WATER AND GAS PIPE CO.,
N. W. corner of Green and Bay Streets, Jersey City.

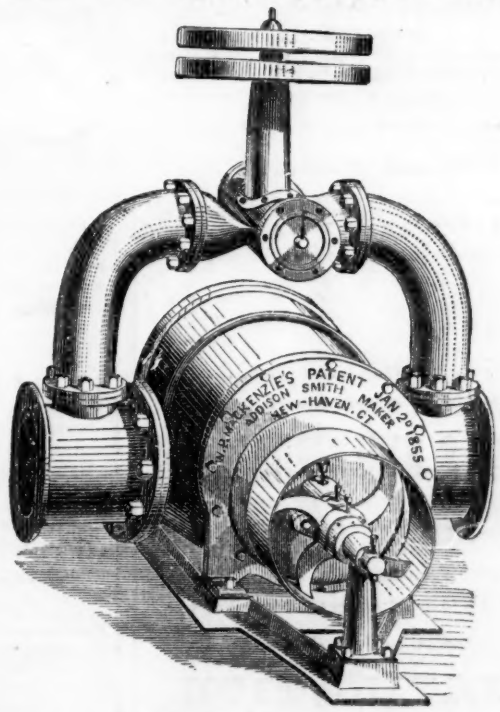
DIRECTORS:

J. R. HALLADAY, Pres. G. H. BAILEY, Eng'r. GARWOOD FERRIS, Treas.
WILLIAM KEENEY. JAMES CRAWFORD. STEPHEN MORGAN.

Smith & Sayre Manufacturing Company.

The Mackenzie Patent Gas Exhauster,

AND PATENT COMPENSATOR.



They are made to pass from 4,000 to 150,000 cubic feet of gas per hour; will increase the production and illuminating power of the gas, and add very much to the durability of the retorts, either clay or iron. The Compensator obviates entirely the necessity of water-joints, is compact, durable cleanly, not liable to get out of order, self-acting, quiet, and certain in its operation.

We are also sole proprietors and manufacturers of the

MACKENZIE PATENT BLOWER, PATENT CUPOLA AND SMELTING FURNACE.

The Blower is a Force Blast machine, durably built, and can be driven with one-third the power required to drive the ordinary Fan. The Cupolas are manufactured in sizes to melt from 1 ton to 20 ons per hour, will save one quarter of the time required by the old style Cupola, and 33 per cent. fuel. Address

B. KREISCHER., Prest.
JAS. SAYRE, Treas,
CHAS. W. ISBELL, Sec'y Office 484 Broadway, New York.

OREGON IRON FOUNDRY,

738, 740, 742 and 744,

Greenwich Street, New York.

CASTINGS FOR

GAS WORKS

OF ALL DESCRIPTIONS, INCLUDING

Purifiers, Exhausters, Compensators, Self-Acting Valves, Branches, Bends, &c.

FLOYD'S PATENT

Malleable Iron Retort Lid.

SABATTON'S PATENT

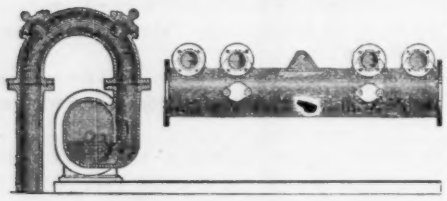
Furnace Door and Frame.

REFERS TO—J. A. Sabattan, Esq., Engineer Manhattan Gas Co—Col. A J. White, Metropolitan Gas Co.—C. C. Mowten, Engineer New-York Gas-light Co.—J. Mowten Saunders, Engineer Baltimore Gas Co.—John T. Harrison, Engineer Savannah Gas Co.

186] HERRING & FLOYD, Proprietors

SILAS C. HERRING. JAMES R. FLOYD

STANLEY'S HYDRAULIC GAS MAIN.



WILLIAM TAYLOR & SONS,

COLUMBIAN IRON WORKS,

Nos. 11, 13 & 15 Adams Street, Brooklyn, N. Y.

MANUFACTURERS OF ALL KINDS OF

Castings, Iron Buildings Store Fronts, Columns, Girders and Beams.

ALSO,

Gas Works Castings of all kinds.

Steam Engines, Mill Gearing, Hydraulic Presses for the manufacture of Linseed and Cotton Seed Oils, Sugar Mills, Single and Double Action Pumps, also Steam Pumps, Coal Oil Machinery, High and Low Pressure Boilers, Tanks, Kettles, Soap Curbs, &c., MADE AND REPAIRED AT THE SHORTEST NOTICE.

WM. TAYLOR. JAMES A. TAYLOR. EDWIN S. TAYLOR.

PLASTIC SLATE ROOFING JOINT STOCK COMPANY.

OFFICE 157 [Room 19] BROADWAY,

New York.

W. C. POTTER, Vice Prest.
J. M. ALLEN, Sec. and Treas.

LICENSES GRANTED.

PLASTIC SLATE

FOR

ROOFING & OTHER PURPOSES.

The process of reconstructing Slate Stone from a disintegrated state was

PATENTED FEBRUARY 21st, 1865.

It is a combination of

Pulverized Slate & Viscous Matter,

(the latter possessing qualities of geological and chemical affinity for the former,) and is a development of one of the simple but unalterable tendencies of nature.

As a Roofing Material it Stands Unrivalled.

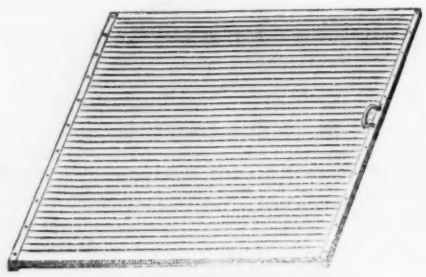
A mastic—it adapts itself to every shape and slope. Non-combustible, impervious, non-expansive, and undecaying.

Frost does not Crack nor Heat Dissolve it.

The only roofing material ever discovered that will resist the action of the elements as long as the structure it protects. Being susceptible of little, if any wear, from exposure, and

Perfectly Fire-Proof,

It is unequalled as a coating for Railroad and Farm Buildings, Fences, Bridges, bottoms of Vessels, Vaults, etc.



JOHN L. CHEESMAN,

MANUFACTURER OF PATENT CONICALLY SLOTTED SOLID WOOD TRAYS.

Two hundred per cent. cheaper than Iron and will last twice as long.

☞ All persons are cautioned against purchasing of any other person. Orders received by mail, or otherwise. JOHN L. CHEESMAN,

147 and 149 Ave. C., New York City.

BAY STATE FIRE BRICK

—AND—

CLAY RETORT WORKS.

CHELSEA, MASS.

DAVIS & CHADDOCK,

MANUFACTURERS.

Office Nos. 125 and 127 Water-st., Boston.

Also agents for the sale of J.K. BRICK & Co's, Clay Retorts, Fire-Brick, Gas-House tile, etc. 66tf

BROOKLYN TUBE WORKS.

B. T. BENTON,

MANUFACTURER OF

WROUGHT IRON AND GALVANIZED

TUBES,

For Steam, Water, or Gas.

MANUFACTORY AND OFFICE,

Corner John and Adams Street, Brooklyn

ALSO

58 John Street New York. 171

Notice to Companies Operating in Lands, Mines, Railroads, etc.

AN ENGINEER AND GEOLOGIST WHO HAS had long experience in the Coal-fields, Collieries, Furnaces, and various descriptions of Mines, and in building Inclined Planes on prominent Railroads of the country, etc., is prepared for an immediate engagement. Can give suitable references. Address ENGINEER AND SUPERINTENDENT,

Lock Box 40, Richmond, Va,

T. B. BYNNER,

IMPORTER AND DEALER IN WATCHES AND JEWELRY, Agent for the AMERICAN WATCH. Also every variety of Swiss and English watches, AT THE LOWEST MARKET PRICES.

189 BROADWAY, NEW-YORK.

Opppsite John Street. 62-85

OPPOSITION LINE.

TO CALIFORNIA VIA NICARAGUA;

SAILING EVERY TWENTY DAYS,

With Passengers, Freights, and United States Mails, on the following first class Steamships:

On the Atlantic Ocean.	On the Pacific Ocean.
Steamship Santiago De Cuba.	Steamship America.
" San Francisco.	" Moses Taylor.
" Dakota.	" Nevada.

PASSAGE AND FREIGHT AT REDUCED RATES.

Sailing days from New York.

1866	December 20th,	January 10th and 30th.
1867.	February 20th,	March 10th and 30th.
"	April 20th,	May 10th and 30th.

And so on at intervals of twenty days leaving on the Saturday previous, when a regular sailing day comes on Sunday.

For further information, apply at the Company's office, 177 West-st. corner Warren-st. N. Y.

66tf D. N. CARRINGTON, Agent.

JONES & COLLINS'

AERO GAS HEATER BURNER.

Patented 7th August, 1866.

The utility of the article will be at once apparent. It is used chiefly for GLUE KETTLES, HOT WATER BOILERS, OYSTER SALOONS, the SICK CHAMBER, or NURSERY; for JEWELERS, ARTISTS, and PHOTOGRAPHERS. Its perfect combustion, freedom from soot or smoke, GREAT ECONOMY of Gas, and its adaptation to different pressures by its regulating screw, make it a desirable article.

ECONOMY.

In all Wire Gauze and Perforated Heaters, it is necessary to keep a nearly wide open cock, and consequently large consumption of Gas. This burner can be turned down so as to use not more than 1-5th of a foot per hour.

DIRECTIONS FOR USE.

Screw on the Burner as it comes in the package. Light the holes in the dome top. Then, by gradually unscrewing the cylinder from the base, it (the cylinder) is elevated, and the air passages opened, permitting the air to mix with the Gas until the flame becomes quite blue, and combustion perfect.

Burners 2 feet per hour.
" 4 feet per hour.
" 8 feet per hour.

WM. JONES,

19 Washington street, Boston, and 56 Park street, Chelsea, Mass. 176

J. FIRMIN,

Gas Fitting and Plumbing,

Nos. 64 & 66 Maiden Lane, cor. William-st.

Residence, No. 1147 Broadway, near 26th-st.

HOUSES FITTED UP WITH PLUMBING AND GAS WORK IN THE MOST MODERN AND IMPROVED STYLE. SEWERS CONNECTED. BRASS AND LATHE WORK. JOBBING IN ALL ITS BRANCHES ATTENDED TO WITH PUNCTUALITY AND DISPATCH.

GAS BILLS REDUCED.

Gas Lights perfected upon New and Unerring Principles.

REFERENCES:

At A. T. STEWART'S the gas-lights were improved and the gas bills reduced one-third, amounting to several thousands of dollars per year.—A. O. WILLCOX, No. 40 Wall-st.

At the TRIBUNE ASSOCIATION gas bill reduced upwards of one hundred dollars per month, and better lights given.—SAMUEL SINCLAIR Publisher.

At H. B. CLAFLIN'S, late Claflin, Mellen & Co., gas bill reduced—amount not yet ascertained—but it will be at the same ratio, and light improved.—Mr. BANCROFT.

At WM. SCHIEFFELIN & Co.'s, corner William and Beekman-sts., good light obtained and maintained at all parts of the premises, without additional cost—a result despaired of even by the Gas Co. owing to the deficiency of supply. No deficiency by FIRMIN'S system.

Similar results guaranteed under similar circumstances, or NO CHARGE. 65-88

NATIONAL FOUNDRY AND PIPE WORKS.

Office and Works—Carroll, Pike, Smallman and Wilkins Streets,

PITTSBURGH, PA.

WM. SMITH,

Manufacturer of all kinds of GAS and WATER PIPE, BRANCHES, CONNECTIONS, T's, ELBOWS, and ALL CASTINGS USED AT GAS AND WATER WORKS.

I offer special inducements to parties wishing to purchase, my Pipe is Smooth, regular in weights, and cast vertically.

N. B.—Pipe from 3-inch and upwards, cast in 12-ft. lengths.

☞ SEND FOR CIRCULAR AND PRICE LIST.

149

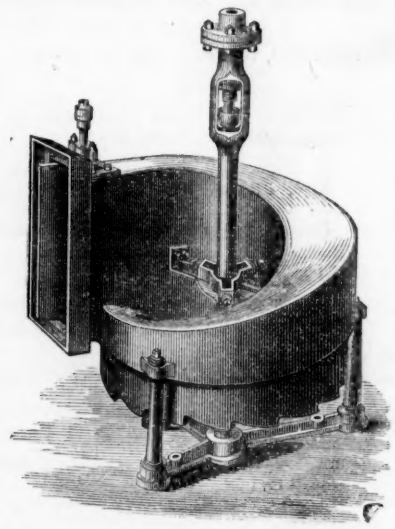
FOR SALE

THE VALUABLE IMPROVEMENT FOR SAVING and otherwise improving the gas, invented by Dr. J. S. Wood, described in the "Gas-light Journal" October 2d, 1866, is now for sale by State or County rights.

Address J. S. Wood, Patentee, No. 400 Library Street, Philadelphia, Pa.

STEVENSON'S

Helical Jonval Turbine Water Wheel,



For first-class mills and factories where great economy of wate and simplicity and durability are required.

Manufactured by the Patentee,

J. E. STEVENSON, Hydraulic Engineer,

40 Dey Street, New York,

☞ Stevenson's Jonval Turbine Water Wheel gave the highest per centage of power over all others at the trial of Water Wheels at Fairmount Works, Philadelphia, March 9th, 1860. NINETEEN WHEELS WERE TESTED. The only practical test on record.

PORTABLE CIRCULAR SAW MILLS

With STEARN'S PATENT SETS, far superior to Rack and Pinion and Screw sets. Years of wear will not cause lost motion. All plank sawed with perfectly even thickness. No time lost in setting. Suitable for sawing any kind of Lumber and Timber.

SUPERIOR MULAY MILLS

With the latest improvements, at reasonable prices.

Steam Engines and Boilers

Especially adapted to lumbering purposes.

FOR SALE.

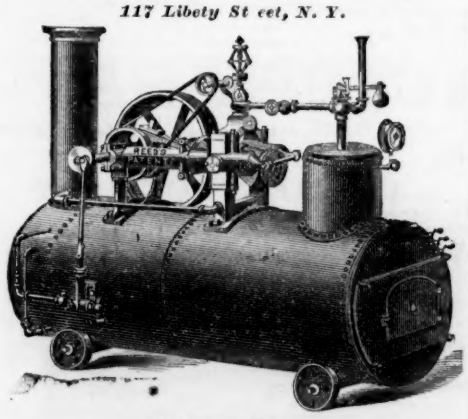
PORTABLE FLOUR AND GRIST MILLS.
WATER-WHEEL GOVERNORS.
ROTARY HAND AND POWER PUMPS.
RUBBER AND LEATHER BELTING.
CIRCULAR SAWS.

53-76

REED & COGSWELL,

CONSULTING ENGINERES,

117 Libety St eet, N. Y.



MANUFACTURERS OF

Slide & Oscillating, Stationary & Portable

ENGINES,

Of all sizes. Also furnish all kinds of MACHINERY, TOOLS, AND GENERAL SUPPLY. Drawings of all kinds of Machinery executed to order.

JOHN A. REED. [63-86] W. B. COGSWELL.

TURNBULL'S

AUTOMATIC PURIFIER.

STATE RIGHTS FOR SALE ON LIBERAL terms. For further information address by letter, WM. C. TURNBULL, care of T. C. Babcock, 59 Broadway, or to the Editors of this Journal.

EDDY'S

Kerosene Cooking & Heating

STOVES AND RANGES.

THESE COOKING STOVES WILL

☞ *Bake, Boil, Stew, Fry and Roast,*

With the greatest economy and facility, and without heating the room in which they are used. They are perfectly simple, operating like an ordinary Kerosene Lamp with a chimney, and are the only Kerosene Stoves that burn without smoke or odor.

"We have been perfectly astonished to see what a labor-saving, dirt-saving and heat-saving institution is EDDY'S PATENT KEROSENE STOVE. Taking the cost of running it, and the result attained, it is the best patent in the market."—*Worcester Daily Spy.*

Our Heating and Cooking Stoves are very convenient and economical, especially where a fire is required but a few hours at a time.

Orders for Stoves may be sent through American Advertising Agency, 389 Broadway, New York.

ALEX. M LESLEY,

Manufacturers, No. 605 Sixth Ave., New York.

Send for Illustrated Circular. (136

KNITTING MACHINES

FOR

Families and Manufacturer,

☞ *Something New and Invaluable for Family Use.*

We offer the public the simplest, strongest and best Knitting Machine in the world.

It occupies but little space—is portable and can be attached to a stand or table, weighs about 40 lbs.

It will knit a variety of Stitches—the breakage of needles is trifling—the cost of needles is insignificant and the most delicate material can be knit pure and spotless, as the needles are not oiled.

Orders or Machines may be sent through the American Advertising Agency, 389 Broadway, N. Y.

Send for a Circular—Agents wanted.

DALTON KNITTING MACHINE CO.,

137] 537 Broadway, N. Y.

WEED'S

HIGHEST PREMIUM

Shuttle Sewing Machine

Has only to be seen and operated to be Appreciated.

Call and see for yourself before purchasing. Please bring samples of various kinds of thread, (such as is usually found at stores,) and various kinds of fabric, which you know the former most popular Sewing Machines either cannot work at all, or, at best very imperfectly.

SUPERIORITY.

over any other Machine in the market will be seen at a glance.

1st It runs easily and rapidly, and is so constructed as to endure all kinds of hard usage.

2d. No breaking of threads in going over seams.

3d. No imperfect action of the feed at uneven places in the work.

4th. The Weed-stitch catches of itself, and will sew from the finest lace to the heaviest leather, and 200 cotton to coarse linen thread.

5th. The Weed Machine will do beautiful quilting on the bare wadding, without using inner lining; thus leaving it soft as if done by hand.

6th. The variety of fancy work that can be done on the

WEED MACHINE,

with so little trouble, makes it equal, if not superior, to six machines combined; for instance, it Binds, Hems, Tucks and Sews on the band at the same time, and in face, the

WEED NO. 2 MACHINE,

as before stated, is equivalent to a combination of any six ordinary machines.

Orders for Machines may be sent through the American Advertising Agency, 389 Broadway, N. Y.

Below we give a few prices:

No. 2. Oil Black Walnut, Ornamented with Hemmer.	$60,00
No. 2. Oil Black Walnut, Hall Case, Ornamented, with Hemmer.	65,00
No. 3. Extra Oil Polished Black Walnut, Half Case, Large Table beautifully Ornamented.	75,00

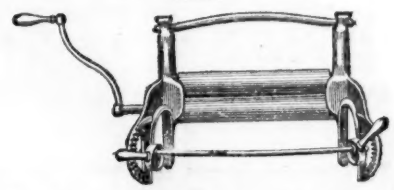
WEED SEWING MACHINE Co.,

136. 506 Broadway, New York

PUTNAM'S CLOTHES WRINGER.

IT IS THE ONLY RELIABLE

Self-Adjusting Wringer.



No Wood-work to Swell or Split. No Thumbscrews to get out of order. Warranted with or without Cog wheels.

It took the First Premium at Fifty-seven State and County Fairs in 1863, and nearly double that number in 1864, and is, without an exception, the *best* Wringer ever made. Patented in the United States, England, Canada, and Australia. Agents wanted in every town, and in all parts of the world. Energetic agents can make from $3 to $10 per day

WHAT EVERYBODY KNOWS, VIZ.:

That Iron well galvanized *will not rust.*

That a *simple* machine is better than a complicated one.

That a Wringer should be *self-adjusting, durable, and efficient.*

That thumb-screws and fastenings cause *delay* and *trouble* to regulate and keep in order.

That wood soaked in water will *swell, shrink,* and *split.*

That wood-bearings for the shaft to run in *will wear out.*

That the Putnam Wringer, with or without cog wheels, will *no tear the clothes.*

That cog-wheel regulators are not essential.

That the Putnam Wringer has *all* the advantages, and *not one* of the disadvantages above named.

That all who have tried it pronounce it the *best* Wringer ever made.

That it will wring a thread or a bed-quilt *without alteration.*

We might fill the paper with testimonials, but insert only a few to convince the skeptical, if such there be; and we say to all, *test* Putnam's Wringer. Test it *thoroughly* with *any* and any others, and if not entirely satisfactory, return it;

PUTNAM MANUFACTURING CO.—*Gentlemen:* I know from practical experience that iron well galvanized with zinc will not oxydize or rust one particle. The Putnam Wringer is as near perfect as possible, and I can cheerfully recommend it to be the best in use. Respectfully yours,

JOHN W. WHEELER, Cleveland, O.

Many years' experience in the galvanizing business enables me to indorse the above statement in *all particulars.*

JOHN C. LEFFERTS, No. 100 Beekman St.

NEW YORK, *January,* 1864.—We have tested Putnam's Clothes Wringer by practical working, and know that it will do. It is cheap; it is simple; it requires no room, whether at work or at rest; a child can operate it; it does its duty thoroughly; it saves time, and it saves wear and tear. We earnestly advise all who have *much* washing to do, with all intelligent persons who have *any,* to buy this Wringer. It will pay for itself in a year at most. HORACE GREELEY.

PRICES—$8, $9, and $10.

Sample Wringers sent, express paid, on receipt of price. Manufactured and sold, wholesale and retail, by

PUTNAM MANUF'G CO.,

13 PLATT STREET, New York,
BENNINGTON, Vt.,
CLEVELAND O.

C. GEFRORER,

MANUFACTURER OF

Gas Heating Apparatus

OF EVERY DESCRIPTION,

Gas Burners, &c.

No. 529 COMMERCE STREET,

PHILADELPHIA, PA.

Burners for Wood, Coal Oil and Water Gas.

Gas and Lava Burner Tips

Constantly on Hand

THE AMERICAN METER CO.

Organized under the General Manufacturing Laws of the State of New York

SAMUEL DOWN, PRESIDENT. HENRY CARTWRIGHT, VICE PRESIDENT. RICHARD MERRIFIELD, SECRETARY AND TREASURER

TRUSTEES.

SAMUEL DOWN, WILLIAM HOPPER, R. H. GRATZ, HENRY CARTWRIGHT, RICHARD MERRIFIELD.
THOMAS C. HOPPER, *Superintendent at Philadelphia.*

This Company is now prepared to furnish WET AND DRY GAS METERS, STATION METERS, GOVERNORS, PRESSURE INDICATORS AND REGISTERS, SERVICE and METER COCKS, and all other articles in their line appertaining to the use of Gas-Works.

The combination of Mechanical and Scientific Skill, and the long experience of the several members of the Company, is a sure guarantee of durability, accuracy and excellence of workmanship. Orders addressed

AMERICAN METER COMPANY,

West Twenty Second Street, New York. Arch and Twenty-Second Streets, Philadelphia. No. 23 West Street, Boston will meet with prompt attention.

Harris & Brother, Practical Gas Meter Manufacturers,

Continue, as heretofore at their old Establishment, No. 1117 CHERRY ST., PHILADELPHIA, to Manufacture

WET AND DRY GAS METERS, and all kinds of GAS APPARATUS, and furnish all articles appertaining to the use of Gas Works. ☞OUR WORK WARRANTED—Satisfaction Guaranteed. Orders respectfully solicted, and promptly attended to, by

HARRIS & BRO., No 1117 Cherry st., Philadelphia.

Messrs. Harris & Brother, Philadelphia Gas Works, February 14, 1857.

Dear Sirs;—I take great pleasure in stating that we have found your meters to register with entire correctness, and to be generally of very good quality—the number furnished by you to these works is over 5,000.

JOHN C. CRESSON, Engineer;

Office of the Gas Light Company of Augusta, Ga., March 6th, 1858.

This is to certify that having used meters manufactured by Messrs. Harris & Bro., for the last nine years, we do not hesitate to state they have given entire satisfaction in point of wokmanship and accuracy of registration; they are surpassed by none, and equaled by few manufactories in the Union; we have used meters made by other establishments but our preference is in favor of those made by Harris & Bro., of Philadelphia, Pa.

G. S. HOOKEY, Superintendent of the Gas Light Company of Augusta, Georgia.

Messrs. Harris & Brother, Philadelphia. Philadelphia, March 4, 1858.

Gentlemen—We take great pleasure in bearing our testimony to the very superior character of the meters we have received from your establishment. We have always found the workmanship all we could desire, while the accuracy and reliability of their measurement have always been satisfactory. We have used meters made by other parties, and none have given as entire satisfaction as those received from you. We are, gentlemen, very truly, yours, BIRKINBINE & MEARS.

Messrs. Harris & Brother. March 14, 1857.

Gentlemen—For the last ten years we have used in the Philadelphia Gas Works, meters made in your factory, and take pleasure in expressing my opinion to their correctness. On several occasions I have taken your meters apart, and found the material used in the manufacture of the same, to be as fine quality as is used in those imported from Europe, or made by any of the manufactur in the United States. Respectfully Yours GEORGE WIEGAND, Inspector of Gas Fittings, Philadelphia

C. GEFRORER,

MANUFACTURER OF GAS BURNERS,

529 Commerce Street, Philadelphia, Pa.

Burners for Wood, Coal Oil, and Water Gas. Brass and Lava Burner Tips Constantly on Hand.

GROVESTEIN & CO.,

PIANO FORTE MANUFACTURERS,

499 BROADWAY, NEW YORK.

THE ATTENTION of the public and the trade is invited to our New Scale, Seven Octave, Rosewood Piano-Fortes, which for volume and purity of tone are unrivalled by any that have hitherto offered in this market. They contain all the modern improvements, French Grand Action, Harp Pedal, Iron Frame, Over-strung Bass, etc., and each instrument, being made under the supervision of Mr. J. H. Grovesteen, who has had a practical experience of over thirty years in their manufacture, is fully warranted in every particular.

THE "GROVE-STEEN PIANO-FORTE"
RECEIVED THE HIGHEST PREMIUM AT THE
CELEBRATED WORLD'S FAIR.

Where were exhibited instruments from the best makers of London, Paris, Germany, Philadelphia, Baltimore, Boston, and New York; and also at the American Institute for five successive years, the gold and silver medals from both of which can be seen at our warerooms.

By the introduction of improvement we make a still more perfect Piano-Forte, and by manufacturing largely, with a strictly cash system, are enabled to offer these instruments at a price which will preclude all competition.

PRICES

No. 1,	Seven Octave, round corners, Rosewood, Plain Case,		$275
No. 2,	"	"	" Heavy Moulding 300
No. 3,	"	"	" Louis XIV style 325

a fac-simile of the accompanying cut.

TERMS—Net Cash, in current funds Descriptive circular sent free on application.

MORRIS, TASKER & CO,

PASCAL IRON WORKS

[ESTABLISHED 1821,]

PHILADELPHIA,

Manufacture Wrought Iron Welded Tubes for Gas, Steam or Water; Lap-Welded Boiler Flues, GALVANIZED WROUGHT IRON TUBES,

ARTESIAN WELL PIPES,

of Wrought or Cast-Iron, screwed together, flush inside and out; Gas-works Castings, Retorts and Bench Castings for Coal Gas-works,; Cast-Iron Street Mains, Bends, Branches, Drips, &c.

Gas and Steam Fitters' Tools, &c.

STEPHEN MORRIS,
THOMAS S. TASKER,
CHAS. WHEELER,
STEPHEN M. P. TASKER.

J. VAUGHAN MERRICK, W. H. MERRICK,
JOHN E. COPE.

SOUTHWARK FOUNDRY,

FIFTH & WASHINGTON STREETS,

PHILADELPHIA.

MERRICK & SONS, Engineers,

MANUFACTURERS OF EVERY DESCRIPTION OF GAS MACHINERY.

Retorts, Bench Castings, Condensers, Washers, Scrubbers, Wet or Dry Lime Purifiers, Coke Wagons, Fire Tools, Wrought Iron Grate Bars, Gasholders, either Telescopic or Single, with Suspension Frames complete; Wrought Iron Roof Frames, for Iron or Slate; Stop Cocks, Exhausters, Steam Pumps, Boilers and Tanks, Steam or Hand Air Pumps for proving Street Mains, Centre Seals, Governors, Wrought or Cast-Iron Line Sieves for Purifiers, Hoisting Machines for Lifting Purifier Covers.

Address— MERRICK & SONS,
5th and Washington Sts. Philadelphia.

S. FULTON & CO.,

(Successors to Colwell & Co.)

Manufacturers of

PIG IRON & CAST IRON GAS & WATER PIPES.

Also, Heavy & Light Castings of every description, No. 207 North Water street and 206 North Wharves, Philadelphia.

SAMUEL FULTON, THEO. TREWENDT

TO GAS COMPANIES.

THE UNDERSIGNED DESIRES TO undertake the supervision of several small Gas-works, to visit and examine them as often as may be necessary; to obtain and inspect their coal, castings, fire-brick, and other materials; and to manage their general business in such a manner that they shall be under such supervision as is now attainable in large works, at much increased cost. Also, to advise as general Consulting Engineer and expert in practical chemistry.

CHAS. M. CRESSON,
Late Asst. Engineer of the Philadelphia Gas-works
417 Walnut st., Philadelphia.

POOLE & HUNT,
BALTIMORE, MD.,
are prepared to execute orders for
GAS-HOLDERS,
IRON-ROOF FRAMING,
And other descriptions of
Iron Work for Gas-Works, Water-Pipes, and Heavy Castings, and Machinery generally.

GEO. H. KITCHEN & CO.,

NEW PATENT

GAS APPARATUS

For Country Residences, Public Buildings, &c.,

FROM $300 UPWARDS.

EVERY DESCRIPTION OF GAS FIXTURES.

Gas Fitting in all its branches

561 Broadway,
NEW YORK.

THE WOODWARD
Steam Pump Manufacturing Company,

MNUFACTURERS OF THE WOODWARD PATENT IMPROVED

SAFETY STEAM PUMP,

—Adapted for Mining and Fire Purposes—and
Steam, Water & Gas Fittings of All Kinds

Also, Wholesale and Retail Dealers in WROUGHT IRON PIPE, BOILER TUBES, etc.,

Woodward Building, 76 and 78 Centre Street,
corner of Worth street, *New York.*
Formerly 77 Beekman Street,
53 GEO. M. WOODWARD, Pres't. 64

JOSEPH LENNIG,
1615, 1617, and 1619 Francis St.,
Above Ridge Avenue, Philadelphia, Pa.,
MANUFACTURER OF
Wet and Dry Gas Meters,
STATION, SHOW, & EXPERIMENTAL METERS,
Photometers, Pressure Registers, Indicators, and Gauges, Governors, Meter Provers, Centre Seals, Fluid Gauges, &c.
GAS APPARATUS
Of the most reliable and approved construction manufactured and on hand at the
UNION GAS METER WORKS.

D. PARRISH, Jr.,
GAS ENGINEER
And Contractor for Coal or Oil Gas-Works.
Estimates given for Gas-Works, Gas-Holders, or any Gas Apparatus.
205 1-2 Walnut st., Philadelphia, Pa.
Box 1956, Post Office.

To Manufacturers of Petroleum Gas.

For sale, Parrish's Patent Gas and Air Mixer, adapted to all works using Petroleum or other oils, by which rich Petroleum Gas is mixed, after it leaves the holder, with a proper proportion of air, giving it the greatest illuminating power, without smoke, through any burners. The apparatus being attached to the outlet pipe, requires no alteration of the works.

Apply at the Gas-Works of St. Nicholas Hotel, No. 63 Mercer st., N. Y., where one can be seen in operation; or address D. Parrish, Jr., St. Nicholas Hotel, New York city, or No. 1416 Arch street, Philadelphia.

SAVING OF FUEL TO PARTIES USING STEAM.
DAMPER REGULATORS.

Guaranteed to effect a great saving in fuel and give the most perfect regularity of power. For sale by the subscribers, who have established their exclusive right to manufacture damper regulators, using diaphragms or flexible vessels of any kind. CLARK'S PATENT STEAM AND FIRE REGULATOR COMPANY, No. 117 Broadway, New York.

THE AUBIN BALLANCED
VALVE WATER METER,
(Used also for Oils and Liquors)

Is now in use by many City Water Cos., because of its low price, simplicity, durability, accuracy under any pressure, and (a great advantage) because it runs with less head than any meter used. Manufactured by H. Q. HAWLEY, Albany, N. Y.

WEST'S IMPROVED PUMPS, the most Simple, Durable, and Powerful, and the Cheapest in use.

J. D. WEST & CO.,
No. 40 Cortland street,

R. D. WOOD & CO.,
MANUFACTURERS OF
CAST-IRON PIPE, RETORTS, &c.
Office, 400 Chestnut Street,
PHILADELPHIA.

Great Improvement
IN
Sewing Machines.
EMPIRE
SHUTTLE MACHINE!

Patented February 14th, 1860.

Salesroom, 536 Broadway.

This Machine is constructed on entirely new principles of mechanism, possessing many rare and valuable improvements, having been examined by the most profound experts, and pronounced to be SIMPLICITY and PERFECTION COMBINED.

It has a straight needle, perpendicular action, makes the LOCK or SHUTTLE STITCH, which will NEITHER RIP nor RAVEL, and is alike on both sides; performs perfect sewing on every description of material, from Leather to the finest Nansook Muslin, with cotton, linen, or silk thread, from the coarsest to the finest numbers.

Having neither CAM nor COG WHEEL, and the least possible friction, it runs as smooth as glass, and is

Emphatically a Noiseless Machine!

PRICE OF MACHINES,
COMPLETE:

No. 1, Family Machine, with Hemmer, Feller, Gauge, Braider, & Corder, complete. - - - $60
No. 2 Small Manufacturing, with Extension Table, $75
No. 3. Large Manufacturing, with Extension Table, $85
No 3. Large Manufacturing, for Leather, with Rolling Foot and Oil Cup, 100

One-half hour's instructions is sufficient to enable any person to work this Machine to their entire satisfaction.

Agents Wanted in all Towns in the United States, where Agents are not already established. Also, for Cuba, Mexico, Central and South America, to whom a liberal discount will be given Terms, invariably CASH on delivery.

T. J. McARTHUR & CO.,
536 Broadway.

GAS-BURNERS.

WIGHTMAN BROS.,
IMPORTERS AND
SOLE AGENTS
For the United States and Canada, of
SCHWARZ'S
GERMAN LAVA GAS-TIPS
And proprietors of Winchester's Improved
LAVA TIP GAS BURNERS,
No. 25 Kilby Street,
BOSTON, MASS.

T. G. ARNOLD,
MANUFACTURER OF
GAS-BURNERS,
And Importer of SCOTCH TIPS,
224 and 226 West 21st street,
formerly No. 447 BROOME ST., New York.
Mercury Cups, Portable Sockets, Burner Pillars, Burner Pliers, &c., &c.

C. GEFRORER,
Manufacturer of
GAS-BURNERS,
For Lighting and Heating Purposes.
GAS HEATING AND COOKING APPARATUS; FITTERS' ROVING APPARATUS, &c.
529 Commerce st., bet. Market & Arch,
Philadelphia

JOSEPH LEES,
Sole Agent for the sale of
Thompson's Gas Controller
in the States of
CALIFORNIA AND OREGON,
San Francisco, Cal.

Carrington & Co.'s
GENERAL
PURCHASING
AGENCY,
In Connection with all the Expresses
No. 30 Broadway,
NEW YORK.

Established 1854.

Purchases to order any article wanted from New York, or Europe, for ladies' or gentlemen's use or wear,---comfort or luxury,---from a cameo to a cashmer, a seal ring to a steam engine.

Goods purchased at current City prices, and forwarded by Express or as directed.

Commission, Five Per Cent

Remittances, with orders, can be made by Express if preferred, as all Express Agents will take orders, receipt for and forward funds, and see to return of Goods.

THE HAVANA
MEXICAN & BRAZILIAN
EXPRESS.

CARRINGTON & CO.
30 Broadway.

Express for HAVANA and ISLAND OF CUBA by regular steamships weekly.

Express for MEXICO and VERA CRUZ on the 10th and 16th of every month.

Express for ST. THOMAS, BAHIA, and RIO DE JANEIRO each month.

Packages received for United States Brazil Squadron.

Freights should be sent to our office day before sailing of steamer, with invoice, contents and value.

FINKLE & LYON'S
New Family
SEWING MACHINE
Should be known in
IN EVERY TOWN.

To accomplish this at once and save the expense of a *Travelling Agent*, we offer thus, viz:

Any one sending us orders for two machines shall receive one machine free of charge. This proposition cannot avail after we have appointed a local agent in the town.

We have now completed our *new manufacture* at a cost of some $200,000—introducing *new patents*, and such important improvements, that without fear we are able to offer the following stringent guarantee, viz: After a fair trial, if any purchaser does not prefer the FINKLE & LYON FAMILY SEWING MACHINE to any other, he can return it and have back his money.

This machine has taken many of the HIGHEST PRIZES; *is less complicated than any other first class machine; does a wider range of work without changing; requires no taking apart to clean or oil, no "lessons" to set needle, regulate tension or operate machine.*

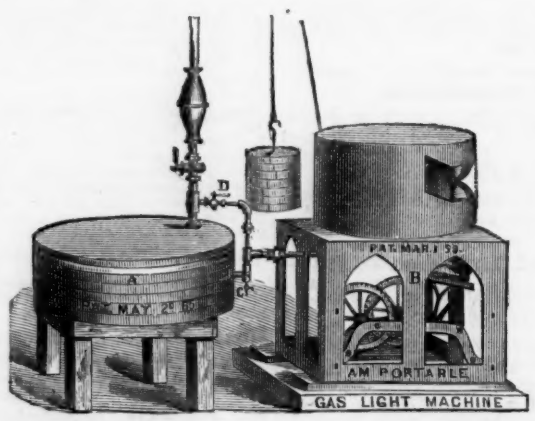
Our new Manufacturing Machine is sold on the same terms as the Family Machine.

Please send for a circular with samples of sewing.

Finkle & Lyon S. M. Co.
No. 581 BROADWAY, NEW YORK.

THE AMERICAN
AIR GAS-LIGHT MACHINE.
HURD, WARREN & SWIFT'S PATENT.

This ingenious PORTABLE GAS-LIGHT APPARATUS is the invention of Daniel Hurd, of Chicago, and patented by Warren & Swift, May 2d, 1865, and as a *Carburator* for air, for illuminating purposes, stands at the head of any known. Combined with a beautiful clock work, for blowing uniform currents of air (J. Griffin's Patent of March 1, 1859,) it constitutes a Portable Gas-Light Machine, at once adapted to lighting dwellings, halls, saloons, churches, railroads, steamboats and public buildings. It possesses the following advantages:



1. The machine is portable, and may be placed in all kinds of buildings, railroad cars, steamboats, etc., without occupying much space; and a boy 12 years old, or house servant, may operate it. It produces gas without fire or heat, and is adapted to both warm and cold climates. Two minutes' attention each day will run it for 24 hours.

2. It affords a clear, brilliant and agreeable light, and is equal in this respect, to coal gas.

3. It is the cheapest light known. The hydro-carbon used to supply it is most abundant and cheap. The gas made by this apparatus costs about 75 cents *per thousand cubic feet.* The hydro-carbon is worth 16 cents per gallon. Two and a half gallons will make 1000 feet of gas. One thousand cubic feet of this gas is equal to about 1,200 feet of coal gas. It may be used, therefore, for cooking and heating purposes, at a great saving over ordinary fuel.

All orders for machines, piping and gas fixtures suitable for buildings, where our machines are wanted, or for hydro-carbon, (warranted,) may be sent to "MONROE & SMITH, Agents AMERICAN PORTABLE GAS LIGHT COMPANY, 31 Courtlandt street, New York."

Careful and skillful men will be sent by the company to set up the machines, and do the necessary piping, etc., at the purchaser's order. Bills for the machines, and work of putting them in, to be paid on completion of the work. Persons ordering machines will be careful to designate how they wish them shipped. The machines weigh about 400 lbs. each. Each person buying a machine should order a barrel filled with hydro-carbon. A barrel will last an ordinary house six to twelve months.

"THE IMPROVED CARBURATOR" is about eight inches square. It is connected with the gas pipes, between the meter and the burners, near the first. It is employed in connection with coal gas and the hydro-carbon, thereby increasing the illuminating power of the gas, besides making it more steady and pleasant to the eye.

The prices of our machines will vary according to the materials used in their construction, and the number of lights desired—from $75 to $3,000.

We select from among several notices, the following testimonials from the Press, and from practical men now using the "AMERICAN PORTABLE GAS MACHINE":

"The American Portable Gas Machine has the following qualities: It can be set up in any public house or private dwelling, is simple in construction, and furnishes a brilliant light, at a cost of only about *one dollar* per 1000 cubic feet, and you only pay for what you get."—*Chicago Tribune.*

* * * "It is simple in construction, perfect in operation, and furnishes a light equal to that of the best coal gas, at less than one-third its cost. The same pipes and fixtures are used as with the common gas."—*Chicago Evening Journal.*

* * * "The time is not far distant when every country seat and village church will be lighted by this admirable contrivance."—*Pittsburgh (Pa.) Presbyterian Banner.*

"We have examined the American Portable Gas-Light, and are satisfied that it is superior to anything of the kind which we have any knowledge."—Prof. Blayney, Assayer of Illinois.

* * * "I take pleasure in recommending it to those who are in want of a cheap and brilliant light."—John Raber, Chicago, Ill.

☞ Every machine warranted to give entire satisfaction. State and County Rights for sale. Energetic and well recommended Agents wanted in every city and county of New York and New Jersey.

Lime in Water Purification.

A patent has been taken out by Mr. James Davis, of Southsea, Civil Engineer, for "an improved method of treating limestone, and applying the products for purifying and rendering water palatable, and for imparting a briskness to other beverages; as also for utilizing the substances to the various purposes of the builder." He submits limestones to heats in retorts, with or without the alkalies, potash, and soda, sustaining the heat until the expulsion of both the free and latent water, together with the carbonic oxide gases present in the materials, be fully consummated, collecting in receivers for use the gases set free. He purifies water by first destroying infusoria, fungi, etc., and decomposing vegetable and animal matter with caustic alkali, separating the substances by subsidency, filtration, or otherwise; and afterwards forces the liberated gases through the caustic fluid in order to free it from the alkali, which it does by converting the soluble lime into an insoluble carbonate. He then runs the bright water from off the deposition into another receptacle, and again gives it a further supply of the carbonic acid gas to impart briskness, and hold in suspension such mineral constituents as may give the characteristics of good refreshing spring water. Further, he applies the caustic alkalies in combination with aluminous, silicious, and ferruginous earths, or one or more of them, for all purposes to which ordinary lime is used, whether it be in the manufacture of mortar, plaster, or cement, or castings of any kind in which lime forms a component part.—*Builder.*

Peat Fuel for Domestic Purposes.

For a summer fuel, for domestic uses, there can be little doubt that peat is to be the favorite.

A ton of it is in bulk about one quarter more than coal, and possesses in this respect a decided advantage for summer service, which will be evident to any one who uses it.

A little fire for a cool morning or evening can be started even more easily than with wood, and, with a very small quantity of the fuel, will yield a quick and cheerful heat.

With a few blocks only, the fire necessary for breakfast, dinner, or tea, can be started and in good condition for use in five minutes, and no more fuel need be burned than is required for the special purpose of the hour; avoiding thereby, not only the absolute waste of a very considerable amount of fuel, which, when coal is used, is necessary to keep up the fire from one meal to another during the day, but the great discomfort of having any fire in the house during the hot days of summer. If covered with ashes, it will keep for a long time, and can be re-kindled at pleasure.

The additional bulk obtained in a ton of this fuel, and the small quantity which is required to be used for the service mentioned above, render it, aside from all other advantages, an *economical* fuel for domestic use in the summer season.

From our own experience, we are well satisfied that those who use it this summer, will find good reason for using it during the winter.—*Leavitt's Peat Journal.*

Brevities.

—Diamonds to the value of $3,250,000 are annually sent abroad from the single port of Bahia, in Brazil.

—There are now on the Kansas Pacific railroad, 25 good locomotives, seven passenger cars and 450 freight cars.

—It is announced that the City Council and the Gas Company of Elmira have had a falling out. The Council have abandoned gas for kerosene oil.

—A series of experiments are now being carried on by the Madras government for raising and propagating the pearl oyster. It is claimed that there is no more trouble in raising the pearl than the common oyster.

—Gun cotton is being used for blasting in the Belcher mine, Gold Hill, Cal. It creates less smoke, and is said to be quite as effective as gunpowder.

—Fifteen miles of the Central Pacific Railroad will be laid from the State (Cal.) line towards Donner Lake in the course of two months.

—One hundred men are at work at the bridge now being erected across the Missouri River at Kansas city, Missouri.

—M. Dubrunfraut finds that the juice from the roots of the Jerusalem artichoke, properly fermented, yields eight to nine per cent. of concentrated alcohol.

—Sulphate of barium as a substitute for white lead is now largely used for the glazing on paper collars. Twenty tons per day are said to be used in New York.

—An immense deposit of pure rock salt has been found at Pahranagat, in Nevada, the mineral being in many cases of perfect transparency.

—Colorado sends 260 specimens to the Paris Exposition. This includes maps, photographs, etc. Nearly 250 lodes are represented.

—The Ensley Gas Company are erecting gas works at Vallejo (Cal). The site chosen is near the water, in front of the United States Hotel.

—The largest water wheel in this country is said to be running at Troy, N. Y. It is over sixty feet in diameter.

—The principle of the stereoscope was well known to Euclid, who lived B. C 300. It was also distinctly described by Galen, the famous Greek physician.

—The sumit tunnel of the Pacific Railroad, which is 1,666 feet through hard granite, will be finished by next August, and in eleven months after its commencement.

—The newspapers of South Carolina and Georgia state that the Sea Island cotton crop will be a very profitable one. Cotton mills are going up in several localities.

DEC. 6, 1867.